

Transmission and Distribution Losses in GEB System corresponding to 2000-01

Volume 2 Annexure

Prepared for Gujarat Electricity Board

TERI Project Report No. 2000ER67

Minutes of the meeting held on September 6, 2000 at TERI for T&D loss estimation in Gujarat

The following persons attended the meeting

- 1. Mr R K Sharma, Member GERC, Ahmedabad
- 2. Mr. P N Upadhaya, Chief Engineer (RE) GEB, Vadodra
- 3. Mr K Ramanathan, TERI
- 4. Mr M S Bhalla, TERI
- 5. Mr. Gaurav Bhatiani, TERI
- 6. Mr. Shahid Hasan, TERI
- 7. Mr. Rahul Mishra, TERI
- 8. Mr. C Anjanappa, TERI

Initiating the discussions Mr. Bhalla traced the history of the T & D proposal submitted by TERI to GEB on September 1999 and explained the scope of the proposed revised study based on the discussions held with GEB in April, June and July 2000.

Mr. Sharma enquired the reasons for delay in initiating the study. Mr. Upadhaya explained that the decision to estimate the T & D losses in GEB by an independent agency was only taken in June 2000. Based on the discussions held in July 2000, GEB selected 30 feeders (6 feeders in each of the five zones of the State, comprising, 2 rural, 2 urban and 2 industrial feeders) to be completed in a period of 9 months at a total cost of Rs. 37 lakhs. This Proposal has already been forwarded to Chairman GEB for approval. On a query by Mr. Sharma about the total number of feeders in the state, it was indicated that 30 feeders worked out to be less than 1% of the total number of feeders in the state. Mr. Sharma, member GERC therefore proposed that the total number of feeders to be studied should be about 1% and more emphasis be laid on agricultural feeders. In view of this, 44 feeders were identified from all the categories. The details are enclosed in the table below.

Table: Details of feeders identified in each category

Feeders	Total number of feeders	Number of feeders selected
EHT	142	2
HT	295	4
Industrial	534	6
GIDC (industrial estates)	168	
Urban	725	7
Rural	2668	25
Total	4532	44

Mr. Sharma had also proposed that the feeder's selection should be done jointly by TERI and GEB

There after Mr. Sharma indicated that GERC has already suggested to GEB to also correctly assess the energy consumption in the unmetered agricultural supply. He therefore, suggested to include the estimation of the unmetered agricultural energy consumption as a part of the study. Since this consumption will have a bearing on the T & D loss estimation.

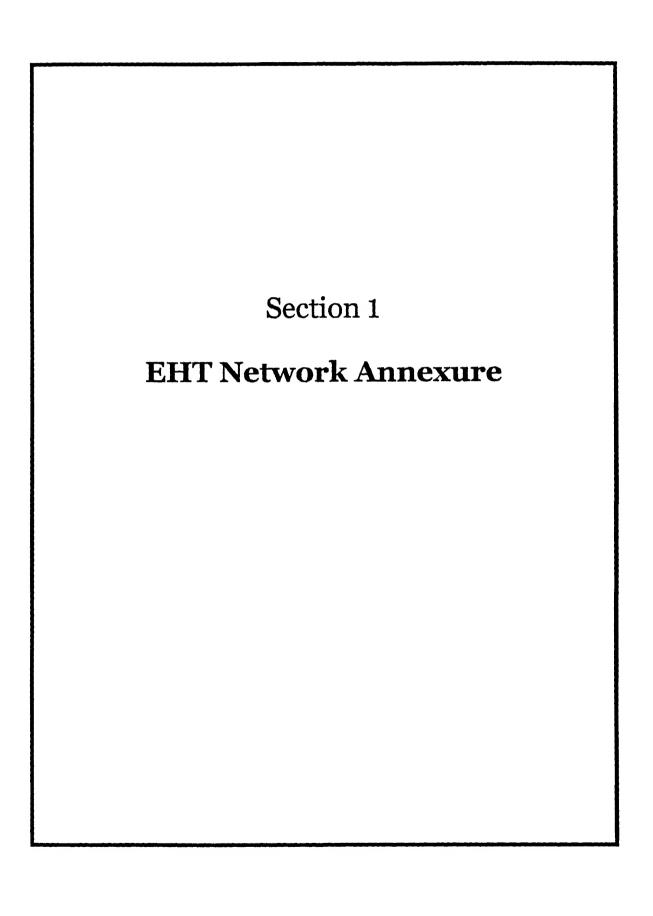
The issue was discussed in detail and the following terms of reference were agreed to jointly by GERC GEB & TERI.

- 1. The scope of the present study should be enlarge to cover above mentioned 44 feeders.
- 2. As already proposed by TERI GEB should install digital meters at all the Distribution Transformers in the all the 44 feeders.
- 3. GEB should also install digital meters at the individual agriculture consumers where the resistance to its installation is not there.
- 4. GEB has already installed about 10000 individual meters for *Tatkal Scheme* for agricultural connections and GWRDC has also installed meters for agricultural connections. These meter readings should be taken into consideration for detailed estimation of agricultural consumption.
- 5. TERI should ensure that all the panel meters are calibrated by GEB before starting the work.
- 6. The representative feeder would be identified jointly by GEB & TERI based on the connected load ect., under each category.
- 7. The maximum time spent for completing the study will be one year from the date of initiation of the study.
- 8. The zero date for the study will be the date of confirmation from GEB regarding installation of digital meter at all the Distribution Centres of the identified feeder at least in one zone of the state.
- In order to avoid any further delay in awarding the work to TERI GERC suggested that only additional cost and time for carrying out the study due to above mention enlarged scope be now indicated by TERI.
- 10. The revised estimate of the cost of the study would be about 50 lacks and the same was conveyed by Mr. Sharma, Member GERC to Mr Srivastava, Member Finance of GEB on telephone.
- 11. Every month or at least quarterly in a year, TERI should give feedback about the status of the project to the Commission
- 12. The methodology for estimation of T&D losses remains the same as has been proposed by TERI in their revised proposal submitted to GEB.
- 13. GERC suggested that every effort should be made by GEB to expedite the issue of letter of award to TERI so as to avoid any further delay in the commencement of the study.

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Transmission System (Network 66 kV and above)

- ⇒ One Line Diagram of the 220 kV Mehsana Grid Network
- ⇒ One Line Diagram of the 220 kV Vav Grid Network
- ⇒ One Line Diagram of the 220 kV Icchapore Grid Network
- ⇒ Energy Sent, received and Losses in the Network (Mehsana Grid Sample Case)
- ⇒ Energy Sent, received and Losses in the Network (Vav and Icchapore Grid Sample Case)
- ⇒ Summary of Losses Report
- \Rightarrow Categorization of Zones

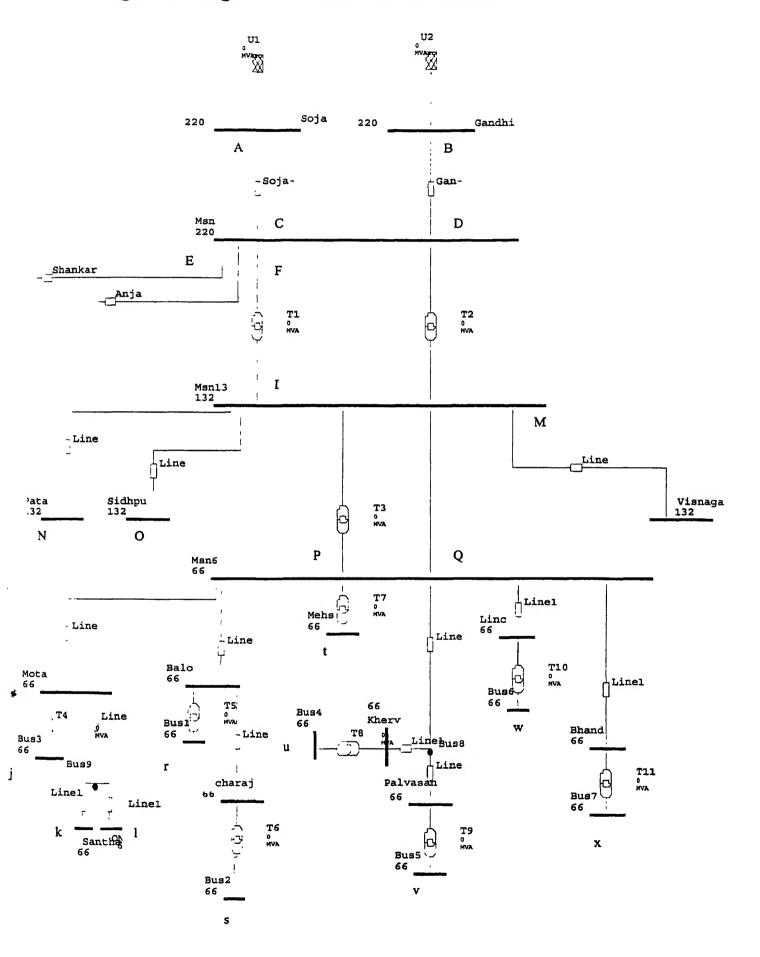
Capacity of 66/22/11 kV sub-stations fed by Vav & Ichhapore

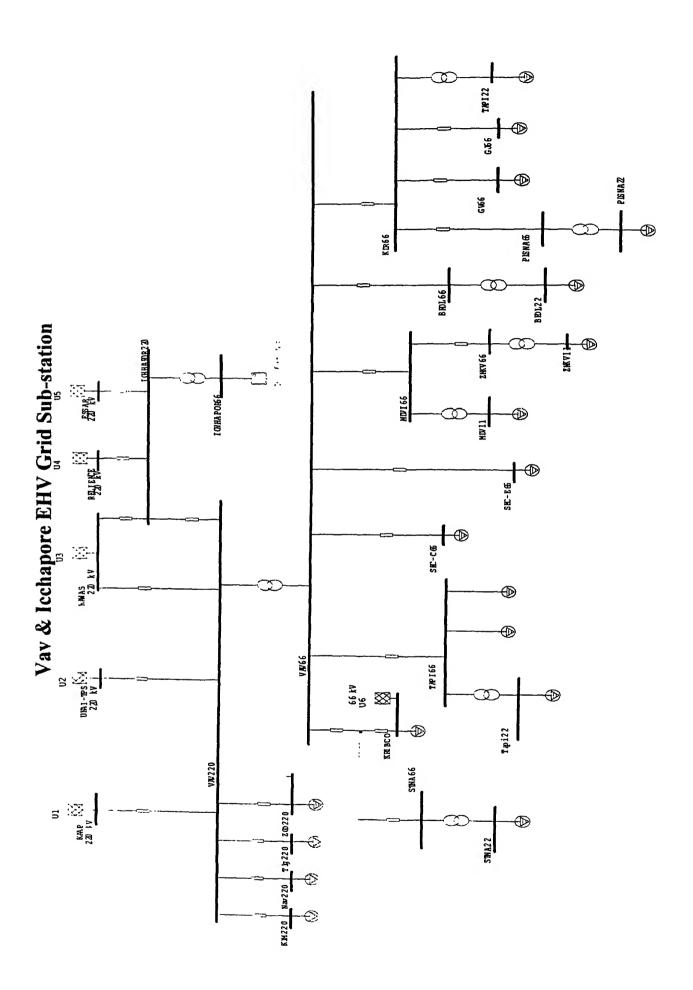
Name of the Grid Sub-station	Name of the 66/22/11 kV sub-stations	Pri/Sec voltage	Capacity in MVA
Vav	1. Kadodara	66/22	1x15+2x10 =35 MVA
	2. Palsana	66/22	2x15= 30 MVA
	3. Bardoli	66/22	2x10+1x15= 35 MVA
	4. Sarthana	66/22	2x10= 20 MVA
	5. Mandavi	66/11	2x10= 20 MVA
	6. Zankhvav	66/11	2x5= 10 MVA
	7. Tapi	66/22	4x15= 60 MVA
Ichhapore	8. Olpad	66/11	1x5+2x10= 25 MVA
	9. Variav	66/11	1x15+1x10= 25 MVA
	10. Ichhapore	66/11	1x15+1x10= 25 MVA

Capacity of 66/22/11 kV sub-stations fed from Mehsana

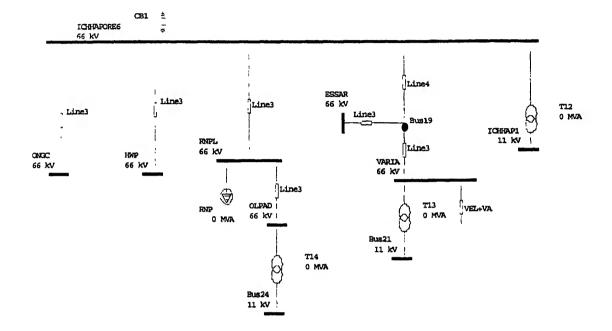
Grid Sub-station	Name & capacity of 66/22/11 kV	sub-station
400 MVA, 220/132 kV & 100	1. Basana	2x15 = 30 MVA
MVA, 220/66 kV Mehsana	2. Dhinoj	2x10 =20 MVA
	3. Balol	2x10 =20 MVA
	4. Bandhu	2x10 =20 MVA
	5. Linch	2x5 =10 MVA
	6. Palavasana	3x10=30 MVA
	7. Kherva	2x10 =20 MVA
	8. Becharaji	2x10 =20 MVA
	9. Modhera	2x10 =20 MVA
	10. Motap	2x10 =20 MVA
	11. Jotana	2x10 =20 MVA

Single Line Diagram of Mehsana 220 kV Network





Ichhapore 66 kV Single Line Diagram



ENERGY RECEIVED AND SENT OUT IN MEHSANA CIRCLE DURING THE PERIOD APRIL-1999 TO NOV-2000

								•				
Period	Apr-00	May-00	20-unr	20110	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	01-Jan	01-Feb	01-Mar
Energy sent to 220 kV Mehsana from												
Soia	228.6	228.6	164.8	106.7	113.0	176.6	219.6	202.0	196.8	197.9	182.9	186.8
Ghandhi Nagar	179.9	179.9	128.1	81.6	92.0	150.9	183.8	178.6	175.2	169.7	150.7	157.9
	408.4	408.4	292.9	188.3	205.0	327.4	403.5	380.6	372.0	367.6	333.6	344.7
Energy Received at 220 kV Mehsana from												
Soia	209.1	203.0	156.0	104.6	111.6	173.6	206.4	190.7	183.9	185.1	174.3	182.2
Ghandhi Nagar	161.0	158.8	113.7	68.9	87.6	130.1	158.5	153.8	150.9	146.2	130.9	145.7
	370.1	361.7	269.8	174.5	199.2	303.7	364.9	344.4	334.8	331.3	305.2	327.9
Energy sent out from Mehsana 220 kV to												
Aniar	102.8	86.5	75.5	52.6	56.8	85.1	99.2	97.2	96.3	94.1	84.9	96.1
Sankhari	109.1	102.5	70.4	45.7	51.6	87.1	104.0	102.9	92.3	85.5	7.97	80.8
220/132 kV Trf. (Primary)	123.0	159.5	114.0	44.2	53.1	100.5	127.6	114.3	114.7	120.8	113.5	120.5
220/66 kV Trf. (Primary)	28.5	30.0	21.9	13.9	15.1	18.5	23.1	21.1	21.7	20.8	21.6	257.6
Energy Received from 220 kV Mehsana at												
220/132 kV Trf. (Secondary)	124.8	129.2	91.5	49.8	50.7	102.9	128.9	115.4	116.3	121.8	118.9	131.1
220/66 kV Trf. (Secondary)	28.5	30.0	21.9	13.9	15.1	18.5	23.1	21.1	31.8	31.5	27.6	327.6
Energy sent out from Mehsana 132 kV to												
Sidour Feeder 1+2	62.8	64.6	41.4	21.3	27.7	45.4	57.5	52.3	53.7	9.99	57.8	69.1
Patan	43.2	47.9	28.3	35.2	15.5	43.3	44.3	44.0	45.6	45.8	43.7	43.5
Visnagar	1.2	0.1	10.4	6.0	2.5	10.5	7.0	0.2	0.0	4.0	2.0	0.0
132/66 kV Trf. (Primary)	15.2	14.7	9.7	3.7	8.3	15.8	18.2	17.6	18.0	18.8	15.5	150.2
Energy Received from Mehsana 132 kV at												
Sidpur Feeder1	26.0	27.8	17.7	9.2	11.7	1.7	24.2	20.8	21.4	22.8	24.0	27.0
Sidpur Feeder2	38.9	36.9	23.2	12.3	15.7	2.5	32.5	29.3	30.9	32.8	32.3	30.4
Patan 1	21.1	23.3	14.0	5.6	7.1	<u>5</u>	21.4	22.0	19.0	33.3	21.0	21.2
Patan 2	21.2	23.7	14.1	7.5	7.0	1.4	22.2	21.1	20.5	22.4	21.3	21.6



			-					-				
	1.3	0.1	11.4	5.8	2.3	11.7	7.5	5.8	1	-	_	
Visitagai	15.4	14.4	9.6	3.7	8.1	16.2	18.4	17.7	18.2	18.2	18.2	0.101
132/66 KV 17. (Secondary)				-								
Energy sent from Mensana oo AV 10	10.6	5.0	4.6	3.4	3.5	4.9	5.3	5.3	5.5	6.1	5.1	5.1
Motap	13.5	10.8	10.4	7.7	13.2	22.5	12.8	12.2	12.8	12.5	10.1	9.8
Baiol	8.7	9.3	8.2	9.2	7.3	7.7	8.2	7.4	6.8	6.7	6.3	6.3
Mensana 66/11 (ff.	4.7	13.0	11.4	1.00	8.4	11.3	13.3	12.2	13.0	12.4	13.4	1.3
Kherya-Palayasana	3.4	0.6	5.4	2.7	3.5	6.5	7.8	7.5	7.6	7.8	0.7	7.8
LINCI	8.0	3.1	2.2	0.7	1.4	2.8	4.3	3.7	3.8	3.9	3.4	3.3
Bhandu	0.1	0.1		0.3		0.0		1.0	0:0	0.0	0.0	0.0
חמימונמ							İ					
Fnerov Received from 66 kV Mehsana at												
Motan	5.0	5.2	4.8	8.5	3.6	5.0	5.5	5.5	5.6	6.3	5.2	9.1
Bolol	10.4	9.6	5.2	3.4	6.6	11.2	12.9	12.4	12.6	12.3	10.2	4.3
Vhonis	5.0	5.4	4.2	1.7	1.9	3.4	8.3	4.5	4.7	4.6	4.0	4.7
Dolowoone	8.2	8.5	7.4	6.2	6.6	8.0	8.3	7.7	8.3	7.8	7.1	8.2
FalaVasaria	7.8	8.4	5.3	2.4	3.2	6.2	7.4	7.1	7.5	7.7	6.7	7.6
Dhandii	3.8	3.3	2.2	4.6	1.3	2.6	4.3	3.6	3.7	3.8	3.3	3.3
Didiluu												
Motab	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Mater 66/14 kV Tr Primary	1.3	1.2	1.0	5.7	6.0	1.9	2.4	2.3	2.3	2.2	7-	1.6
ONGC	3.6	4.0	3.7	2.8	2.6	3.0	3.1	3.2	3.3	4.1	3.5	1.6
Energy Received at												T
Motes 66/11 kV Tr Secondary	1.2	1.1	0.9	5.6	0.9	1.9	2.3	2.3	2.3	2.2	1.9	1.7
ONGC 1(Sauthal)	2.1	2.4	2.1	1.5	1.6	1.6	1.6	1.5	1.7	1.9	1.7	2.8
ONGC 2 (Balol)	1.5	1.6	1.6	1.3	0.1	1.4	1.5	1.6	7-1	2.2	7:	2.8
Auxillary consumption at 66/11 KV Motap	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0:0		0.0	0.0
Fnerry sent out from Motap at 11 kV	1.2	1:1	0.0	5.6	0.0	1.9	2.3	2.3	2.3	2.2	1.9	1.7
			l	a								

Baloi												
Energy sent to												
Balol 66/11 kV Tr Primary	3.9	3.4	2.5	1.5	2.4	4.4	5.1	4.7	4.9	4.9	4.2	3.8
Becharaji	6.5	6.2	2.7	1.9	4.2	6.9	7.8	7.7	7.7		5.9	5.4
Energy Received at												
Balol 66/11 kV Tr Secondary	3.9	3.4	2.5	1.5	2.4	4.1	5.1	4.7	4.9	4.9	4.2	4.3
Becharaji	6.3	6.0	2.6	1.8	4.7	6.8	7.8	7.3	7.6	7.4	5.8	5.4
Auxillary consumption at 66/11 KV Balol	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy sent out from Balol at 11 kV	3.9	3.4	2.4	1.5	2.4	4.1	5.1	4.7	4.9	4.9	4.2	4.2
Becharaji												
Energy Sent to												
Becharaji 66/11 kV Tr Primary	6.3	6.0	2.6	1.8	4.7	6.8	7.8	7.3	7.6	7.4	5.8	5.7
Energy Received at												
Becharaji 66/11 kV Tr Secondary	6.2	5.8	2.5	1.8	3.9	9.9	7.7	7.2	7.5	7.3	5.7	5.4
Auxillary consumption at 66/11 KV Becharaji	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy sent out from Becharaji at 11 kV	6.2	5.8	2.5	1.8	3.9	9.9	7.7	7.2	7.5	7.3	5.7	5.4
Mehasana												
Energy Sent to Mehasana												
Mehasana 66/11 kV Tr Primary	8.7	9.3	8.2	7.0	7.3	7.7	. 8.2	7.4	6.8	6.7	6.3	6.3
Energy Received at												
Mehasana 66/11 kV Tr Secondary	8.0	8.4	7.2	6.2	6.2	6.9	7.5	9.9	6.8	6.7	6.3	8.2
Auxillary consumption at 66/11 KV Mehasana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy sent out from Mehasana at 11 kV	8.0	8.4	7.2	6.2	6.2	6.9	7.5	9.9	6.8	6.7	6.3	8.2
Kherva												
Energy Sent to Kherva												
Kherva 66/11 kV Tr Primary	5.0	5.4	4.2	1.7	1.9	3.4	8.3	4.5	4.7	4.6	0.4	4.7
Energy Received at												
Kherva 66/11 kV Tr Secondary	5.0	5.4	4.1	1.7	1.9	3.3	8.1	4.5	4.6	4.5	4.0	4.7
Auxillary consumption at 66/11 KV Kherva	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Fnerry sent out from Kherya at 11 kV	5.0	5.4	4.1	1.7	1.9	3.3	8.1	4.5	4.6	4.5	4.0	4.7
Dalvacana												
From Sout to Dalvasana												
Palvasana 66/11 kV Tr Primary	8.2	8.5	7.4	6.2	9.9	8.0	8.3	7.7	8.3	7.8	7.0	8.2
From Received at												
Palvasana 66/11 kV Tr Secondary	8.2	8.5	7.3	6.2	9.9	8.0	8.3	7.7	8.2	7.7	7.0	8.2
Auxillary consumption at 66/11 KV Palvasana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy sent out from Palvasana at 11 kV	8.2	8.5	7.3	6.2	9.9	8.0	8.3	7.7	8.2	7.7	7.0	8.2
linch												
Energy Sent to Linch												
Linch 66/11 kV Tr Primary	7.8	8.4	5.3	2.4	3.2	6.2	7.4	7.1	7.5	7.5	8.9	7.6
Jothana												
Energy Received at												
linch 66/11 kV Tr Secondary	8.7	8.4	5.1	2.4	2.8	6.1	7.2	7.1	7.4	7.4	9.9	9.7
Auxillary consumption at 66/11 KV Linch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy sent out from Linch at 11 kV	7.8	8.4	5.1	2.4	2.8	6.1	7.2	7.1	7.4	7.4	6.8	7.6
Bhandu												
Energy Sent to Bhandu												
Bhandu 66/11 kV Tr Primary	3.8	3.3	2.2	4.6	1.3	2.6	4.3	3.6	3.7	3.8	3.4	3.3
Energy Received at												
Bhandu 66/11 kV Tr Secondary	3.7	3.2	2.0	4.5	0.8	2.4	4.4	3.4	3.8	3.8	3.1	3.0
Auxillary consumption at 66/11 KV Bhandu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Energy sent out from Bhandu at 11 kV	3.7	3.2	2.0	4.5	0.8	2.4	4.4	3.4	3.8	3.8	3.1	3.0

ENERGY RECEIVED AND SENT OUT IN MEHSANA CIRCLE DURING THE PERIOD APRIL-1999 TO NOV-2000 Energy all in MU (Million Units) **Before Correction** After Correction factor Period Energy sent to 220 kV Mehsana from Annual energy Net Energy 2204 1 2203.7 1828.3 Ghandhi Nagar 1788.1 4032.4 3991.7 Energy Received at 220 kV Mehsana from 2080.5 2132.3 Soja 1607.1 Ghandhi Nagar 1606.8 3687.6 3739.0 Energy sent out from Mehsana 220 kV to 1027.0 1060.1 Anjar 1008.5 991.5 Sankharı 220/132 kV Trf (Primary) 220/66 kV Trf (Primary) 1305.7 1307.6 493.9 503.6 Energy Received from 220 kV Mehsana at 220/132 kV Trf (Secondary) 1281.4 1272.2 220/66 kV Trf (Secondary) 590.6 587.9 Energy sent out from Mehsana 132 kV to Sidpur Feeder 1+2 610.2 624.1 477.3 Patan 477.2 Visnagar 40.3 43.4 132/66 kV Trf (Primary) 305.5 305.5 Energy Received from Mehsana 132 kV at Sidpur Feeder 1 234.2 245.9 Sidpur Feeder2 317.8 333.7 Patan 1 210.3 219.4 O Patan 2 204.0 194.8 47 7 47.7 Visnagar 132/66 kV Trf (Secondary) 309.6 296.5 Energy sent from Mehsana 66 kV to 64.4 Motap 64 4 Balol 157.1 157.1 Mehsana 66/11 Trf 89.8 83.0 Kherva-Palavasana 120.3 120.3 Linch 76.0 76.0 Bhandu 40.6 40.6 Basana 06 0.6 Energy Received from 66 kV Mehsana at Motap 61.7 61.7 Balol 111 1 111.1 Kherva 52.3 52.3 Palavasana 92.2 92.2 Linch phandu Motap 77.2 77 1 39.8 39.8 Energy sent to Motap 66/11 kV Tr Primary 24.7 23.5 DNGC 38.6 38.6 Energy Received at Motap 66/11 kV Tr Secondary 24.2 24.2 DNGC 1(Santhal) 22.5 22.5 ONGC 2 (Balol) 19.9 19.9 auxillary consumption at 66/11 KV Motap 0.0 0.0 nergy sent out from Motap at 11 kV 24.2 24.2 Balol Energy sent to aol 66/11 kV Tr Primary echaraji 45.4 45.8 70.2 70.2 nergy Received at alol 66/11 kV Tr Secondary 45.8 45.8

69.7

69.7

Becharaji

		0.0
Auxiliary consumption at 66/11 KV Balol	0.0	45.8
Energy sent out from Balol at 11 kV	45.8	400
Becharaji		
Energy Sent to		69.9
Becharaji 66/11 kV Tr Primary	69.9	09.9
Energy Received at		67.8
Becharaji 66/11 kV Tr Secondary	67.8	
Auxiliary consumption at 66/11 KV Becharaji	0.0	0.0
Energy sent out from Becharaji at 11 kV	67.8	67.8
Mehasana		
Energy Sent to Mehasana		
Mehasana 66/11 kV Tr Primary	85.0	89.7
Energy Received at		
Mehasana 66/11 kV Tr Secondary	85.1	85.1
Auxillary consumption at 66/11 KV Mehasana	0.1	0.1
Energy sent out from Mehasana at 11 kV		
Kherva		
Energy Sent to Kherva		
Kherva 66/11 kV Tr Primary	52.3	52.8
Energy Received at		
Kherva 66/11 kV Tr Secondary	51.7	51.7
Auxiliary consumption at 66/11 KV Kherva	0.0	0.0
Energy sent out from Kherva at 11 kV	51.7	51.7
Palvasana		
Energy Sent to Palvasana		
Palvasana 66/11 kV Tr Primary	92.1	94.9
Energy Received at		
Palvasana 66/11 kV Tr Secondary	91.8	91.8
Auxiliary consumption at 66/11 KV Palvasana	0.0	0.0
Energy sent out from Palvasana at 11 kV	91.8	91.8
linch		
Energy Sent to Linch		
Linch 66/11 kV Tr Primary	77.1	78.6
Energy Received at		
linch 66/11 kV Tr Secondary	76.0	76.0
Auxiliary consumption at 66/11 KV Linch	0.0	0.0
Energy sent out from Linch at 11 kV	76.0	76 0
Bhandu		
Energy Sent to Bhandu		
Bhandu 66/11 kV Tr Primary	39.9	39.9
Energy Received at		
Bhandu 66/11 kV Tr Secondary	38.1	38.1
Auxiliary consumption at 66/11 KV Bhandu	0.0	0.0
Energy sent out from Bhandu at 11 kV	38.1	38.1

Loss summary

		Tota	energy loss			
	Actual		Corrected		Corrected (After applying technical factor)	Remark
		%		%		
Elements	Absolute MU	own base	Absolute MU	own base	Absolute MU	
Soja lines	123.64	5.61%	71.40	3.24%	11.24	@#
Gandhinagar lines	221.21	12.10%	181.31	10.14%	11.62	@#
200/132	24.37	1.87%	35.33	2.70%	35.33	@
220/66	-96.68	-19.57%	-84.28	-16.74%	2.01	@#
<u> </u>	50.04	0.540/		- 440		
Patan Sidhpur	58.24 62.88	9.54% 13.18%	44.56 63.08	7.14% 13.22%	44.56 9.07	@ @#
Visnagar	-7.34	13.1076	-4.26	10.22.70	9.07	@#
132/66	-4.03	-1.32%	9.07	2.97%	9.07	@
Mehsana-Motap	2.64	4.10%	2.64	4.10%	2.64	
Mehsana-Balol	41.12	26.17%	41.50	26.41%	6.49	@#
Mehsana-kherva	-24.18	-20.11%	-24.18	-20.11%	3,44	@#
						Q _{rr}
Mehsana-linch	-1.08	-1.43%	-1.21	-1.59%	1.07	@#
Mehsana-Bhandu	0.83	2.04%	0.83	2.04%	0.83	
Motap-ONGC	-3.68	- 9.53%	-3.68	-9.53%	0.10	#
Balol-Becharaji	0.32	0.45%	0.32	0.45%	0.32	
Motap	0.55	2.22%	-0.73	-3.12%	0.55	
Baloi	-0.02	-0.04%	-0.40	-0.88%	0.23	@#
Becharaji	2.07	2.96%	2.07	2.96%	2.07	
Mehsana	-0.07	-0.08%	4.59	5.12%	4.59	@
kherva	0.60	1.14%	1.08	2.05%	1.08	_
Palavasana	0.30	0.33%	3.07	3.23%	3.07	@
Linch	1.09	1.41%	2.63	3.34%	2.63	@
Bhandu	1.75	4.39%	1.75	4.39%	1.75	
Total Loss	404.53		346.47		153.76	
Legend	2	_	_			
	@		factor were app			
	#		oss considered	-		
	@#	Both techni	cal as well as c	orrection fact	or were applied	

				-								-
EVERGY RECEIVED AND SENT OUT IN	SENT OF	IT IN VAV	অ	ICHHAPORE '2;	'220 kV S/S	FROM	APRIL-2000		TO March-2001			
All in MWH												
Period	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01
Energy sent to 220 kV Vav from												
Ukai TPS 1	37050	35540	54470	55930	39650	40670	41290	56570	55390	54870	41610	32140
Ukai TPS 2	39000	36280	57927	65560	42160	39840	39000	57400	54120	54416	36760	22680
Ukai TPS 1+2	76050	71820	112397	121490	81810	80510	80290	113970	109510	109286	78370	54820
Kawas	90115	90592	65435	74240	88890	92979	75301	61945	66554	69212	68526	81928
KAPP 1	47766	33622	35862	30105	41923	45059	51219	11414	40253	40460	32310	46419
KAPP 2	41850	36070	35062	29870	40520	45260	51058	10918	50172	35760	31340	45932
KAPP 1+2	89616	69692.4	70924	59975	82443	90319	102277	22332	90425	76220	63650	92351
Ichhapore	67209.6	70207.2	49567.2	47726.4	72684	74668.8	66928.8	51266	48432	50885	48698	61180
Navsari	384	88	120	0	8	355	48	16	56	0	24	592
Talangpore	92	0	0	0	0	8	8540	0	0	0	0	284
Zagadia	4748	19060	18464	15072	6054	556	8540	24356	13604	8652	20380	9912
Ķīm	444.7	396	186	947	113	0	11.8	105	32	355	609	399
Totallenergy senutovay	828660	32,856	547/098	S 19450	332002	339396	341937	£273990	328673	374610	280257	301466
Energy Received at 220 kV Vav from	from											
Ukai TPS 1	36876	35052	53680	54271	39866.4	40828	39984	57466	55478	57319	43805	33300
Ukai TPS 2	35648	33368	49664	56784	38920	38472	37976	57162	56372	57142	41438	29075
Ukai TPS (1+2)	72524	68420	103344	111055	78786.4	79300	77960	114628	111850	114461	85243	62375
Kawas	89152	89940	65092	73582	87656	91448	74194	61426	66106	68770	67810	80908
KAPP 1	46828	33148	35296	29740	41432	44472	50496	11216	39892	39988	31928	45424
KAPP 2	40704	34553	33718	28573	38624	43187	48787	10413	47667	34006	30694	43948
KAPP (1+2)	87532	67701	69014	58313	80026	87659	99283	21629	87559	73994	62622	89372
(chhapore	67318	70216.8	49456.8	47796	73020	74314	66638	51119	48384	50760	48530	56692
Navsari	416	88.72	132.48	2	4.8	320	59.04	15.36	75.12	0.48	25	159.6
Talangpore	91.2	0	0	0	0	2.4	8332.8	0	0	0	ō	93.6
Zagadia	4603	19570	18033.6	14788.8	5906.4	532	8332.8	23899	13243	8652	20380	9912
	472.8	432	196.8	1286.4	120	0.48	14.4			403	665	220
Totallenergy Received at Vav	522/03/5163	器	90526977	3068232	425549.6	333575:9	334814 2728247		1327226.7	#317040	285275	299432
Energy sent from 220 kV Vav to												

										-		
All in MWH						+		- 8	0000	0,000	Feb-01	Mar-01
Dougl	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	0c-100	Nov-00	Dec-00	O-lies	L	20407
2012	45516	27981.6	27292.8	19377.6	48488	69004	49749	28178	45427	38563	7365U	16407
KIM	77000	50508	49896	54224	9552	21748	45596	35608	52356	51740	45644	46584
Talangpore	707	0000	462 B	OBO	6021	16903	3297	262	2755	5640	55	2594
Zagadia	96/4./	6.0	133.0	25.46	50050	32145	53627	44698	66343	67782	59015	49689
Navsari	45363	64836	6/400	0140	20020:3	2750	542	2.4	360	31	214	988
Ukai TPS 1	268.8	440	220	1516	5013	200	3 66		356	25	222	152
Ukai TPS 2	192	456	192	1968	1488	2448	000			1	436	1140
1 (Kaj TPS (1+2)	461	968	412	3484	3501	5198	878	2.4	136	CS	430	
(2 1) O (1 1)	0	0	0	0	0	0	0	9	4	0		٦
Kawas	0000	3208	566	262	0	0	0	350	2	0	246	0
KAPP 1	3200	0530		200	c	6	0	330	2	0	224	0
KAPP 2	5	7300	0 0	005	5 6	6	c	680	4	0	470	0
KAPP (1+2)	3200	2658	1084	700	2	5 6	3 6	1	254.4	0	223	253.6
Ichhanore	22	2.4	144	2068.8	128	7	3	0.14	1.57	+		7000
	100004	163168	158292	146524	199565	185610	175777	160734	166927	162822	128679	162281
220/66 KV In. (Pri.)	- 13	対象が変数	を	が必要が	なが、温の	SSOROB	858622	#270173	534786	326612	258172	291039
Totalienergy/seht/from/220/kv/V	3778	ichord.	Tal Otto									
Energy Received from 220 kV Vav at	/av at							12000	16400	20797	22826	30330
Kir	45189	27951	27250	18661	46553	68840	20968	C1787	40400	10100	20007	4224E
Talangpore	27809	49730	48962	53260	9405	21213	44697	35021	51449	7//00	44030	200
20060000	9836	632	164	984	6120	16968	3380	216	2768	5772	84	2736
Zagadia	2000	١	67800	76790	59760	33048	53736	44256	65760	66912	58869	56265
Navsari	44010	8	000	1520		2720	520	0	360	40	240	1280
Ukai TPS 1	780	430		2080		2600	440	0	250	10	140	730
Ukai TPS 2	700	900		3600		5320	096	0	610	50	380	2010
Ukai TPS (1+2)	400	OSD					0	15	9	0	0	0
Kawas	0							280	137.6	0	256	0
KAPP 1	3200			7,68.8				355	-	512	192	0
KAPP 2	0	2360	518	204.5		0		CCC			440	
КАРР (1+2)	3200	5688	1140	473.3	0	0	0	745	137.0	2.16	440	
	21.6	2.4	144	2056.8	158.4	0	0	0.16	256	0	225	\bot
Iciliabole	180779	151	156695	141340	190661	163606	170492	155488	160564	151628	155112	153122
220/bb KV III. (Secoridary)		38 54			69	25	28	48.23	50.79	50	49.52	56.9
Aux. Consn.	THE PROPERTY OF	が必然が	STATE OF THE PROPERTY OF THE P	142	の数がある	430895	M 324233	#324233 £264016.2	[326953.6 於313972 終283784 以 287934	313972	283784	287934
Tötal energy Received from 122	20 £310 830.0	# dronos	10000000	NEO SELOCIO	71							

THE WAYE											1	<
	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01
Energy sent from 66 kV Vav to												
Kamrej			240	360								
Velenja+Variav	28	64	30	305	35						74	240
Kribco+Sarthana	3836	4849	3457	3800	4812	4279.8	4569	4220	4599.72	4598.82	4334.4	4803.58
Tapi	35680	29235	31483	24930	38626	39560	40382	43466	41448	39484	46116	45408
SEC-C stn.	46559	42261.2	42816	39904	44235	47893	47901	39626.7	38437.6	34875.9	35215.28	33281
SEC-E stn	42519	40540.6	41991.6	38529	40393	41248	38508	27926.28	31090.68	30794.1	30347	36211
Kadodra	24520	2388	23480	23560	24760	26100	26480	25640	26980	25300	23220	20300
Sachin A	0	200	200	760	0	0	0	1640	200			
Sachin B	0	320	160	900	0	0	0	1240		120	40	40
Bardoli	13095	9234	11988	7712	8334	10998	11313	9099	8591.8	10287	9792	10881
Mandvi	5880	5508		5101	6645	6208	7106	6058.8	6170		6300	7085
Totalkenerpysent from 65 kv/VI. 4 Frink	Auga 1	156062	168695	1,15565	167840	1,6587	69292	158917	#157578	151706	55439	158249
Energy Received from 66 kV Vav at	av at											
Kamrej (Exp at Vav)	0	0	240	360	0	0	0	0	0	0	0	0
Velenja+Variav (Exp @ Vav)	28	64	30	305	35						74	240
Kribco (1+2)	196	1296	58.4	42.4	3.2	0	4	0	0.0032	114	30.8	0.8
Sarthana												
Tapi (1+2+3+4)	32340	25412	26730	20576	31946	37998	41804	43652	41882	39142.8	44792.8	46761
SEC-C stn. (1+2)	47124	43342	42548	39954	44524	48184	47880	40158	38536	34924	35274	36596
SEC-E stn (1+2)	42496	41938	40588	38678	40326	41212	38050	27988	31044	30752	30380	38267
Sachin - A (Exp at Vav)	0	200	200	760	0	0	0	1640	200	0	0	0
Sachin - B (Exp at Vav)	0	320	160	900	0	0	0	1240	0	120	40	40
.Kadodra (1+2)	24371	23670	23270	23416	24517	25940	26280	25654	27179	25108	22998	19850
Bardoli	13464	11009	9055	6286	8098	9583.3	10137	8569.7	0096	8855	9262	11577
Mandvi	7611			4866	6260	5236	6862			6170		7082
Trainflants fr Received	67,630	L 154869	148483	135846	156219	168153	210121	155208	0E4730	145/86	149,158	9
Sartial Contract												
Energy sentreceived from Sarthana 66 kV	thana 66 kV											
66/22 kV Trf. (Pri.)												

All in MWH		00 1101	00 01.4	00-11-11	A110-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01
Period	Apr-uu	1	Soll Soll	3250	000	0 0000	2500	4332 B	4710	4602	4399	5196
66/22 kV Trf. (Sec)	3519.6	3670.8	3534	3750	4920	3330.8	ones .	4332.0	2 6	+ 2	4 6	172
Ally Consti	0.035	0.22	0.017	0.022	0.92	9.	1.84	20.	1.92	-	- 1	
Aux. Collist.	3519 57	3670.58	3533.98	3749.98	4919.08	3989.20	3498.16	4330.92	4708.08	4600.30	4397.40	5194.28
Energy sent on 22 AV recuers												. !
Enormy conf from Tani 66 kV to												
Lichana	20490	13302	13048	10788.4	18266.4	21728	16060	20399.2	16538.4	16523	21593.6	15878.4
	1784	164.5	1683.7	213.8	3287	548.5	7806.6	8566.5	9614	9109.7	8907	11483.4
66/22 kV Trf (Pri.)	14818	18054.2	17549.5	14754	17360.2	18473.5	17228.2	15811.6	16892	14513	14389	18167
Energy Received from Tabi 66 kV at	kV at											
66/22 kV Trf (Sec)	20409.8	21721.8	21724.4	18238.4	21360.8	23294.1	22051.7	19550.7	16747.13	14374.6	14836.35	18465.4
Aux Consu	33.95	35.7	33.49	33.83	30.3	34.12	36.46	31.9	29.66	31.3	28.347	32.7
Fueray cent on 22 kV feeders	20375.85	21686.1	21690.91	18204.57	21330.5	23259.98	22015.24	19518.8	16717.47	14343.3	14808	18432.7
Kadbarasts												
Enray sent from Kadodra 66 kV to	/ to											
Palsana	6501	292	4911	4710	5016	6126	6547	6048	6672	6543	6093	6480
Garden Vareli	925.6	1305.4	1662.9	1947	1887.7	2392.9	1888.4	2471.1	2090.7	1860.3	1155.9	4506
Garden Jolva	1988	2470.5	2281.1	2637	2197	2597.16	2038.8	2642.8	1890	2271	1671.5	8505.6
66/11 kV Trf. (Pri.)	15569.6	15321.5	14989.9	15251.2	16165.4	16260.9	16352.6	16099.9	27179	25108	22958	19850
Energy Received from Kadodra 66 kV at	a 66 kV at											
Palsana	6292	5435	4836	4575	4816	5726	6345	5786	6417	6335	2930	6049
Garden Vareli	932.5	1315.7	1676.01	1959.18	1904.6	2412.8	1904.3	2491.3	2106.2	1874.3	1162	4527
Garden Jolva	1999.6	2479.6	2288.4	2647.6	2210.6	2605.5	2048.1	2650.8	1896	2277.3	1619.9	8515
66/22 kV Trf.(secondary)	14473.5	14058.15	14590.45	13055.2	14555.5	15130.6	15213.15	15306.6	26750	24760	22528	12956
Aux. Consn.	1.25	1.173	1.108	1.867	3.06	3.115	3.043	2.372	2.57	2.67	2.47	2.5
Fneray sent on 22 kV feeders	14472.25	14056.98	14589.34	13053.33	14552.44	15127.49	152	15304.23	26747.43	24757.3	22525.53	12953.5
स्विडिंग एउ <i>डिंग</i>							F. a. 151		-		25	in the second
Energy sent/received from Palsana 66 kV	sana 66 kV											
66/22 kV Trf. (Pri.)	6292	5435	4836	4575	4816	5726	6345	5786	6417	6335	5930	6049
66/22 kV Trf. (Sec)	6433	5645	4896	4769	5031	6108	6496	9009	9 6670	6490	2909	6511
Aux. Consn.	1.5	1.3		1.2	1.5	1.2	0.5	0.5	3.07	3.41	2.76	3.2
Cross Constitution												

All in MWH												
Period	Apr-00	May-00	00-unf	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01
	6431.5	5643.7	4895	4767.8	5029.5	6106.8	6495.5	6005.5	6666.93	6486.59	6064.24	6508.2
Bardollis/stransparent					至			THE REAL PROPERTY.	No. of the last		美女女女	
Energy sentreceived from Bardoli 66 kV	Joli 66 kV											
Energy sent to Mahuwa	0	802	674	0	292	0.3	0	-0.3	0	30	-150	0
66/11 kV Trf. (Pri.)	13464	10207	8381	6288	8041	9583	10137	8570	9600	8825	9412	11577
66/11 kV Trf. (Sec)	13319	10064	8333	6203	7905	9444	9866	8428	9553	8700	9301	11385
Aux. Consn.	3.2	3.2	3	3	3	3	3	3	3	3	3	3.5
Energy sent on 11 kV feeders	13315.8	10060.8	8330	6200	7902	9441	9983	8425	9550	8697	9298	11381.5
Chemicky 1. 3/5.			13 ye		1.00					-		
Energy senttreceived at Mandvi 66 kV	66 KV											
Zankhavav												
66/11 kV Trf. (Pri.)												
66/11 kV Trf. (Sec)	5641	5089	4058	3714	5034	4881	5349	4371	4710	4776.8	4934	6087
Aux. Consn.	1.8	2.5	3.1	3.7	3.9	3.7	3.4	2.8	3	2.7	2.5	2.8
Energy sent on 11 kV feeders	5639.2	5086.5	4054.9	3710.3	5030.1	4877.3	5345.6	4368.2	4707	4774.1	4931.5	6084.2
ZEITKIEVEV-3É												
Energy sent/received atZankhavav 66 kV	vav 66 kV											
66/11 kV Trf. (Pri.)	1884	1769	1408	1694	1824	1749	1912	1768	1856	2033	1906	1490
66/11 kV Trf. (Sec)	1866	1720	1394	1677	1806	1732	1893	1750	1903	1939	1839	1461
Aux. Consn.	1.5	1.8	1.8	1.8	1.8	2	2.1	2	1.8	2.2	2.4	2.4
Energy sent on 11 kV feeders	1864.5	1718.2	1392.2	1675.2	1804.2	1730	1890.9	1748	1901	1936.8	1836.6	1458.6

ENERGY RECEIVED AND SENT OUT AT	=	ORE 220	CHHAPORE 220 KV S/S FROW APRIL .2000 TO MARCH.2001	ROM AP	NO - 118	TO MA	RCH-20	2				
All in MWH	L											
	Apr-00	May-00	Jun-00	Jul-00	Aug-00	Sep-00	Oct-00	Nov-00	Dec-00	Jan-01	Feb-01	Mar-01
Contained to Ichanore 220 kV from						11.5						建筑建筑
Relience	517.2	658.8	222	396	240	8129	ď	46	787	1434	900	790
Kawas	63396	47769	59939	55302	53121	55747	18013	32405	64037	60467	2007	20/
Essar	32783	49889	28844	33661	71351	49381	113888	64416	21832	23123	21969	50219
Vav	21.6	2.4	144	2068.8	156			0	254		223	154
Philips and the state of the st	818/818	81531	615.	11128	898	1.63958	1 5 5 5 6 1 1 1 2 8 0 7 1	19999	BEEGN	BLODE I	15	
Energy Received at Ichhapore 220 kV fron									A STATE OF THE STA			100
Relience课的严格加技能指令等。但是是一种基本	速522.8	₩635.6	WW 228	##411	都到251	¥8012∄	4.8 ×4	₹.48.£	1.286 E	1415	REG	714
Kawas Tangan Tan	£62813	第475543	3 3 4 7		52262	55.184	187.44	21/203	至17.23 地格の66年場場の7.24日	Kenzea	FOROT	* E0340
Essai Mandala de la companya de la c	34885	#52459			75245	47.161	409632	61344	61344 20316 21516	21516	119428	49152
		解析が対	# 144	8.9502	1583	景學		4:10%	2401年 4257年	を開き、	報926時	
Total Windrgy Inches Wed Actich Happing	198243	#100850	0.2506	90570 \$93084	127917 440357	d 10357	128382	1931131	931131 81504 R8200 R0126	88200	.R0126	100240
Energy sent from Ichhapore 220 kV. to:					新新港 新港市			计算证				
220/6GKV/IT/#(Pri31	25458	124772		82214	82822	9292B	31288	A1826	31326 599380 1293841	20284	2062	SOLATON
CALBOTON AND THE STATE OF THE S		18082	8888	F158	240.6		180	10.0	7.07	#768	E GA	300
KAWAS THE RESERVE THE LAST OF THE LEGISLES OF THE PARTY O	第86722	数1234	M8912	18912 138136	16128		25118	MARK.	#89J#	M-10 %	在118	41466年
1888	3069.6	#12612	608716	608716 4662746 数157.2 基1150到	8167.2	1,1503	图192科	聚192科 整960 科	#4304¥	#3048ğ	¥1860	年1236年
COLUMN TO SECURE THE S	£67210	華70207	第49567	47726	7.2684	74669	66928	851266		50885	48698	61180
	1177		图10:	3.0.0	200		LA SECTION				BORE	193KEG
Energy Received from Ichhapore 220 kV a												
220/66 kV Trf. (Sec)	24668	24218	30592	32142	33274	32956	36410	30236	28782	28424	29334	34720
Reliance	522.8	635.6	228	411	251.2	32	ဗ	46	47	719	89	396
Kawas	365	1233.6	1905	3878	16434	2431	25454	10626	145	115	125	1197
Essar	3104	1276	6168	6744	3200	1184	196	980	4180	3092	1180	1260
Vav	67318	70217	49457	47796	73020	74314	66638	51119	48384	50736	48530	56693
。 1945年 1945年 (1945年) (1945年) 1945年 - 1945年	11/1/12	(i) PA	0,45,747	7	15:37	1:1111.1		KE .	37.6	9806	4.15	3,200
Energy sent from Ichhapore 66 kV to												
ONGC	1.26	50.4	0	0	0	0	0	8	0	40	10	0
HWP	1758.4	4788	5901.7	8324.6	7762.3	0696	8652	10996	9693	9772	7361	8859
Olpad+Rama Paper Mill	7287.7	6717.8	7642.1	6395.8	8388	8208	6506	9671	3564	5049	5376	5992
Variav+Essar Pump	8372.7	7224.1	8885.7	9669	9284.6	8975	7588	6296	6554	7001	9270	11333
66/11 kV Trf. (Pri.)	8254.7	8573	8546.6	8332.3	8956	9194	9826	8140	7341	7034	6823	9968

Abitch Broy Aphillips of Abitch Son about 1861 1982		Brok.	1977.01	The Late		E-green	Park!			28895	28840 456 50	96180
Energy Received from Ichhapore 56 KV at	1	48 45						α		41	45	
ONGC	40404	50,40	60400	7 7070	2000	2000	7000	0000	40035	4015R	7650	7000
HWP	5723 7	0.0420	27,7470	6759 5	7.000	CESS	7887	3032	2007	4554	2002	5461
Olpad	1742.1	1825.7	1081	1072 2	9000	2704	1828	2137	636	486	402	296
Kama Paper Ivili Eccar Dimn	70.9	51.8	80.3	39.5		112	99	22	2	62	9	53
Variav	8650.1	8591.8	8406.3	8274.8	8670.7	8937	9253	8005	7366	8995	11280	14366
66/11 kV Trf. (Sec.)	9214	9471	9212	8953	9450	9191	9534	7939	6963	0099	6683	10034
Aux. Consn.	12.18	12.64	12.57	13.75	13.54	13	14	20				
Energy sent on 11 kV feeders	9448.3	9761.9	10739	9229.4	9392	9203	9970	8197				
(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	, in			V 77				Section 1			, , , , , , , , , , , , , , , , , , ,	44
Energy sent from Olpad 66 kV to												
66/11 kV Trf. (Pri.)	5747.6	5694	5239.1	5116.3	5697.7	5386	5677	5445	5055	4926	4762	5496
Energy Received from Olpad 66 kV at					-							
66/11 kV Trf. (Sec.)	5408.3	5311.3	4847.3	4749.2	5302.3	4912	5197	4853	4724	4408	4252	5493
Aux. Consn.	1.35	1.37	1.194	1.09	1.3	1	2	2	2	2	2	7
Energy sent on 11 kV feeders	5407	5309.9	4846.1	4748.2	5301	4910	5196	4851	4723	4407	4250	5492
VIII VIII VIII VIII VIII VIII VIII VII				-				H. Heart	174	4	i training .	4.4°
Energy sent from Variav 66 kV to												
66/11 kV Trf. (Pri.)	8450.1	8591.8	8406.3	8274.8	8670.7	8857	9253	7915	7346	7897	8908	11427
Velenia+Vav	200					80		06	20	1097	2371	2940
Energy Received from Variav 66 kV at												
66/11 kV Trf. (Sec.)	8368.2	8501.4	8254.2	8149.8	8494.8	8699	£296	7745	0699	6225	6283	7986
Aux. Consn.	2.62	2.79	2.95	3.35	4.11	4	4	4	5	4	4	5
Engrave eart on 11 kV feeders	9355	A RONG	82513	2116 K	9400 7.	REGE	0880	7774	REAR	0003	6270	7082

a	
C	

Energy loss calculation at var	Cas		Cas		Cas		_
All units in MWh	Energy loss	% loss	Energy loss	% loss	Energy loss	% loss	Remark
220 kV line loss							
Jkai TPS-Vav	9240	0.8%	14311	1.3%	14311	1.3%	
(awas-Vav	9926	1.1%	8975	1.0%	8975	1.0%	
CAPP-Vav	25266	2.7%	21069	2.3%	4366	0.5%	
chapore-Vav	5312	0.7%	4092	0.6%	4092	0.6%	
/av-Navsan	-5771	-0.8%	56000	8.2%	1753	0.3%	@
/av-Talangpore	11729	2.3%	9183	1.8%	9183	1.8%	
/av-Zagadia	820	0.4%	620	0.3%	620	0.3%	
/av-Kım	-649	-0.1%	-476	-0.1%	1460	0.3%	
220/66 kV Tr loss	69217	3.5%	61397	3.0%	8108	0.4%	
Relience-icchapore	2150	11.4%	2064	11.0%	94	0.5%	
ssar-icchapore	4284	0.7%	8322	1.4%	8322	1.4%	
Cawas- icchapore	4789	0.7%	5319	0.8%	5319	0.8%	
20/66 kV Tr. loss	2975	0.8%	26767	7.2%	745	0.2%	
66 kV line loss							
Krib-Sarthana	289	0.6%	470	0.9%	470	0.9%	
/av-Tapı	22781	5.0%	22193	5.0%	22193	5.0%	
/av-Kadodra	1967	0.7%	8377	2.8%	8377	2.8%	
/av-Bardolı	5316	4.4%	5 52 0	4.4%	5520	4.4%	
/av-Mandvi	258	0.3%	7163	9.3%	3658	4.6%	
Kadodra-Palsana	2757	3.9%	2379	3.4%	2379	3.4%	
/av-SEC-C Stn	-6038	-1.2%	-1206	-0.2%	14411	2.8%	@
/av-SEC-E stn	-1621	-0.4%	-55	0.0%	10136	2.2%	@
(adodra-G Vareli	-172	-0.7%	-172	-0.71%	17	0.07%	@
Kadodra-G Jolva	-48	-0.1%	-48	-0.14%	17	0.05%	@
cchap-HWP	-626	-0.7%	-626	-0.7%	112	0.12%	@
cchap-RNPL&Olpad	1804	2.2%	1680	2.1%	2497	3.10%	@
cchp-EP& Variav	-13521	-13.8%	-12633	-13%	1368	1.40%	@
6/22/11 kV Transformation loss (Vav)							
6/22 kV Tapı	-34765	-17.6%	-33136	-17.0%	779	0.4%	@
6/22 kV Kadodra s/s	17729	8.0%	16225	7.4%	809	0.4%	
6/22 kV Bardolı s/s	1465	1.3%	1465	1.3%	1465	1.28%	
6/11 kV Zankvav	313	1.5%	159	0.8%	159	0.75%	
6/22 kV Palsana	-2580	-3.8%	-708	-1.0%	137	0.20%	
6/11 kV icchapore	-3259	-3.3%	-3614	-3.6%	399	0.40%	
6/11 kV Olpad	4785	7.4%	3455	5. 5 %	237	0.40%	
6/11 kV Variav	8927	8.6%	9083	8.9%	267	0.30%	

Vav EHV Grid s/s Energy Data			Case-3
Energy sent to 220 kV Vav from		After CF	CF+Tech loss
Ukai TPS 1	545180		
Ukai TPS 2	545143		
Ukai TPS 1+2	1090323		
Kawas	925717		
KAPP 1	456413		
KAPP 2	453812		
KAPP 1+2	910225		
Ichhapore	709453		
Navsan	1691		
Talangpore	8924		
Zagadia	149398		
Kim	3599		
Total energy sent to Vav	3799329	3796817	3796817
Energy Received at 220 kV Vav from			
Ukai TPS 1	547925	<u> </u>	
Ukai TPS 2	532021		
Ukai TPS (1+2)	1079946		
Kawas	915784		
KAPP 1	449860		
KAPP 2	434874		
KAPP (1+2)	884734	888970	
Ichhapore	704245	702414	702414
Navsarı	1299		<u>i. — — — — — — — — — — — — — — — — — — — </u>
Talangpore	8520		
Zagadia	147853	147468	147468
Kim	3928	3918	3918
Total energy Received at Vav	3746309	3745070	3761774
Energy sent from 220 kV Vav to			
Kim	451724	449691	449691
Talangpore	491788	489575	489575
Zagadia	48934	48714	48714
Navsarı	685896	681301	681301
Ukai TPS 1	9345	9303	
Ukai TPS 2	7844	7809	
Ukai TPS (1+2)	17189	17112	17112
Kawas	14	14	14
KAPP 1	7924	7976	
KAPP 2	3734	3722	
KAPP (1+2)	11658	11698	11698
/chhapore	3124		3110
220/66 kV Trf. (Pri.)	2000373	2026928	2026928
Total energy sent from 220 kV Vav	. 3710701	3728143	
Energy Received from 220 kV Vav at			
Kim	452043	449828	447892
Talangpore	480463		
Zagadia	49660		
Navsari	692060		
Ukai TPS 1	9616		
Ukai TPS 2	8710	<u></u>	
Ukai TPS (1+2)	18326		
Kawas	21		
KAPP 1	8202		
	1 02///	1 0202	1

KAPP (1+2)	11883	11883	11883
Ichhapore	3020	3007	3007
220/66 kV Trf. (Secondary)	1931156	1965531	2018820
Aux. Consn.	615	615	615
Total energy Received from 220kV Vav	3638632	3604717	3710318
Energy sent from 66 kV Vav to			
Kamrej	600	629	629
Velenja+Variav	776	788	788
Kribco (1+2)	52159	52225	52225
Tapi (1+2+3+4)	455818	444913	444913
SEC-C stn.(C1+C2)	493006	495742	511360
SEC-E stn (E1+E2)	440098	440648	450839
Kadodra	294220	297883	297883
Sachin A	3000	3384	3384
Sachin B	2520	2520	2520
Bardoli	121325	125984	125984
Mandvi	76457	76855	79857
Total energy sent from 66 kV Vav	1939979	1941570	1970380
Energy Received from 66 kV Vav at			
Kamrej (Exp at Vav)	600	629	629
Velenja+Variav (Exp at Vav)	776	788	788
Kribco (1+2)	1746	1771	1771
Sarthana	0	0	0
Tapi (1+2+3+4)	433037	422720	422720
SEC-C stn. (1+2)	499044	496948	496948
SEC-E stn (1+2)	441719	4407031	440703
Sachin -A (Exp at Vav)	3000	3384	3384
Sachin -B (Exp at Vav)	2520	2520	2520
Kadodra (1+2)	292253	289506	289506
Bardoli	116009	120464	120464
Mandvi	76199	69692	76199
Total Energy Received	1866902	1849123	
Sarthana sis: 10 1000 de la 100 de central de la 10	7,00		
Energy sent/received from Sarthana 66 kV		<u> </u>	
66/22 kV Trf. (Pri.)	0	01	
66/22 kV Trf. (Sec)	50125	49984	49984
Aux. Consn.	13	13.3	
Energy sent on 22 kV feeders	50112	50112	50112
Tapi s/s		1	1
Energy sent from Tapi 66 kV to			
Udhana	204615	2094341	166455
SEC-A stn.	61563	61502:	61502
66/22 kV Trf. (Pri.)	198010	194763	194763
Energy Received from Tapi 66 kV at			
66/22 kV Trf. (Sec)	232775	227898	193984
Aux. Consn.	392	392	
Energy sent on 22 kV feeders	232383	232383	
Kadodra s/s)		
Enrgy sent from Kadodra 66 kV to		ı ´	
Palsana	71299	70921	70921
Garden Vareli	24094	24094	24283
Garden Jolya	33190	33190	33255
66/22 kV Trf. (Pri.)	221106	218416	203000
Energy Received from Kadodra 66 kV at			
Palsana	685421	68542	68542
Garden Vareli	24266	24266	24266

&arden Jolva	33238,	33238	33238
66/22 kV Trf.(secondary)	203377	202191	202191
Aux. Consn.	27	27	
Energy sent on 22 kV feeders	203350	202164	
Palsana s/s	0		
Energy sent received from Palsana 66 kV			
66/22 kV Trf. (Pri.)	68542	69539	68542
66/22 kV Trf. (Sec)	71122	70248	68405
Aux. Consn.	21	21	
Energy sent on 22 kV feeders	71101	71101	71101
Bardoli s/s	0		
Energy sent received from Bardoli 66 kV			
Energy sent to Mahuwa	1923	6378	6378
66/11 kV Trf. (Pri.)	114086	114086	114086
ର୍ଜ/11 kV Trf. (Sec)	112621	112621	112621
Aux. Consn.	36.9	37	
Energy sent on 11 kV feeders	112584	112584	112584
Mandvi s/s	0		
Energy sent/received at Mandvi 66 kV			
Zankhavav	0	0	
66/11 kV Trf. (Pri.)	0	0	
66/11 kV Trf. (Sec)	58645	55284	55284
Aux Consn.	36	36	
Energy sent on 11 kV feeders	58609	55249	55249
Zankhayay 9/s	, O	0	•
Energy sent/received atZankhavav 66 kV	O	0	
66/11 kV Trf. (Pri.)	21293	21080	21080
66/11 kV Trf. (Sec)	20980	20921	20921
Āux. Consn.	24	24	
Energy sent on 11 kV feeders	20956	20956	20956



For Sample Size

		Mehsana	la		Vav and Icchapore	hapore
	Before applying Correction Factor	After applying tecl	After incorporating technical energy loss (Wherever required)	Before applying Correction Factor	Affer applying Correction Factor	After incorporating technical energy loss (Wherever required)
Total annual energy Input	4032.41	3991.74	3765.12	4284.92	4284.30	4284.30
Total annual energy out put	1488.82	1516.41	1516.41	3932.80	3847.75	3856.95
Total annual energy export	2075.84	2094.95	2094.95	275.11	284.74	241.80
Total annual energy loss	467.74	380.38	153.76	77.01	151.81	185.55
% Loss	11.60%	9.53%	4.08%	1.80%	3.54%	4.33%

Load flow summary for three different loading conditions for the selected Sample grid substations

Mehsana

2.79%	35735.70168	1280669.722	3.449%	6.60	191.39
% Loss	Tech. Energy loss, MWh	Energy Input, MWh	% loss	Power loss, MW	Power input, MW
		Technical Loss Calculation (Sept 7th, 2000)	Technical Loss Ca		
% Loss	Tech. Energy loss, MWh	alculation (Sept 7th, 2000) Energy Input, MWh	Technical Loss Ca	Power loss, MW	ver input, MW

2.274%	24725.46839	1087263.701	2.557%	3.78	147.76
% Loss	Tech. Energy loss, MWh	Energy Input, MWh	% loss	Power loss, MW	Power input, MW
		Technical Loss Calculation (Mar 29th, 2000)	Technical Loss Ca		

3.31%	51722.1936	1564670.554	3.70%	7.81	210.88
% Loss	Tech. Energy loss, MWh	Energy Input, MWh	% loss	Power loss, MW	Power input, MW
		Technical Loss Calculation (Sept 15th, 2000)	Technical Loss Ca		

Power input, MW Power loss, MW % loss Energy Input, MWh Tech. Energy loss, % Loss	2.040%	13982.10526	685275.5604	2.64%	3.05	115.55
	% Loss	Tech. Energy loss, MWh	Energy Input, MWh	% loss	Power loss, MW	put, MW

		Technical Loss C	Technical Loss Calculation (Sept 7th, 2000)		
Power input, MW	Power loss, MW	% loss	Energy Input, MWh	Tech. Energy loss, MWh	% Loss
636.53	18.97	3%	4907054	134604	2.70%

		Technical Loss Ca	Technical Loss Calculation (Mar 29th, 2000)		
Power input, MW	Power loss, MW	% loss	Energy Input, MWh	Tech. Energy loss, MWh	% Loss
			•		
708.37	15.44	2.18%	5398629	105498	1.95%

Power loss, MW % loss Energy Input, MWh	2.40%	116383	4756114	2.77%	20.13	687.26
	% Loss	Tech. Energy loss, MWh		ssol %	Power loss, MW	ower input, MW

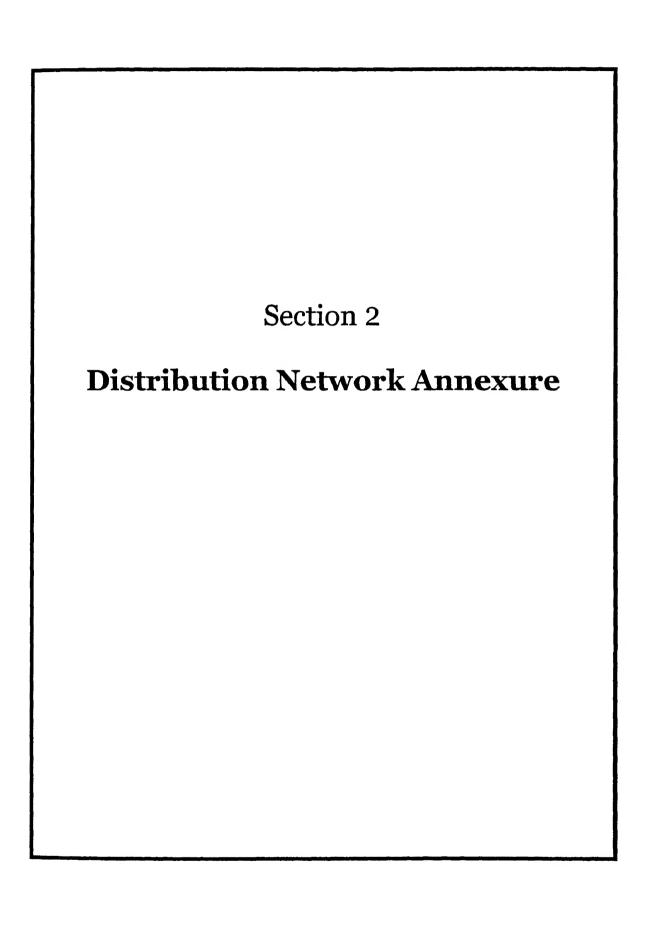
		Technical Loss (echnical Loss Calculation (2 July, 2000)		
Power input, MW	Power loss, MW	% loss	Energy Input, MWh	Tech. Energy loss, MWh	% Loss
626.15	14.85	2.37%	4662313	97564	2.10%

Categorization of Zones in to predomenantly Industrial and Agricultural

Zone	Circle	Туре
South	Valsad	Industrial
South	Surat	Industrial
South	Bharuch	Industrial
Central	Baroda	Industrial
Central	Baodda City	Mix
Central	Anand	Mix
Central	Godhra	Industrial
North	Sabarmati	Mix
North	Mehsana	Agricultural
North	Palanpur	Agricultural
North	Himmatnagar	Agricultural
West 1	S'Nagar	Mix
West 2	Rajkot	Mix
West 1	Bhavnagar	Mix
West 2	Jamnagar	Mix
West 1	Porbandar	Agricultural
West 1	Amreli	Agricultural
West 2	Bhuj	Agricultural

Zone Predominantly type

North Agricultural
Central Industrial
South Industrial
West 1 Agricultural
West 2 Agricultural



Distribution System (11 kV and below Network)

- ⇒ North Zone
- ⇒ Central Zone
- ⇒ South Zone
- ⇒ West Zone 1
- ⇒ West Zone 2

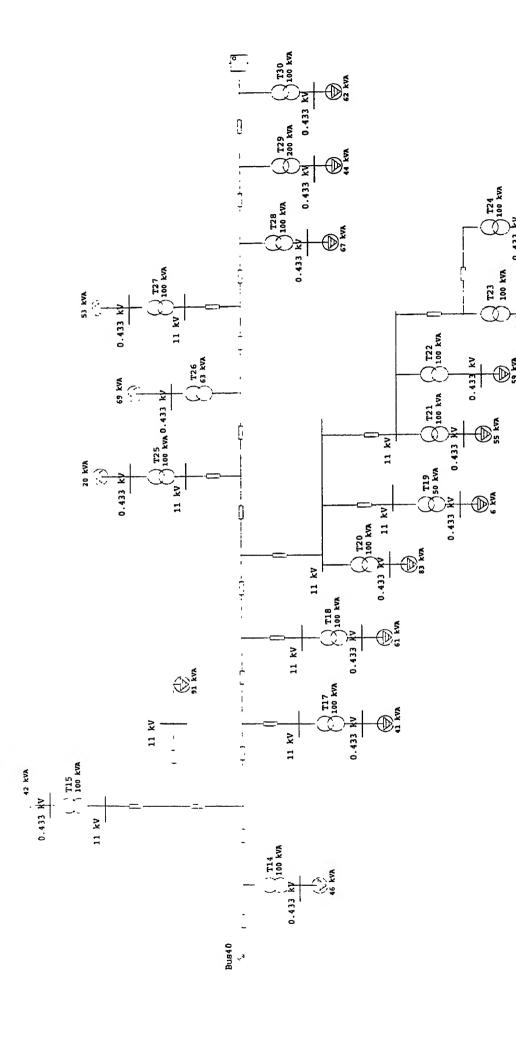
Distribution System North Zone

- ⇒ One Line Diagram of the 11 kV network
- ⇒ Load Flow Summary Report
- ⇒ Energy Losses and Agricultural Consumption
 Sample Case
- \Rightarrow Transformers and Agricultural Consumers
- ⇒ Sanctioned Demand Analysis
- ⇒ Summery for the Zone

Project File: Rajkamal

14:07:53 Jul 03, 2002

page 1

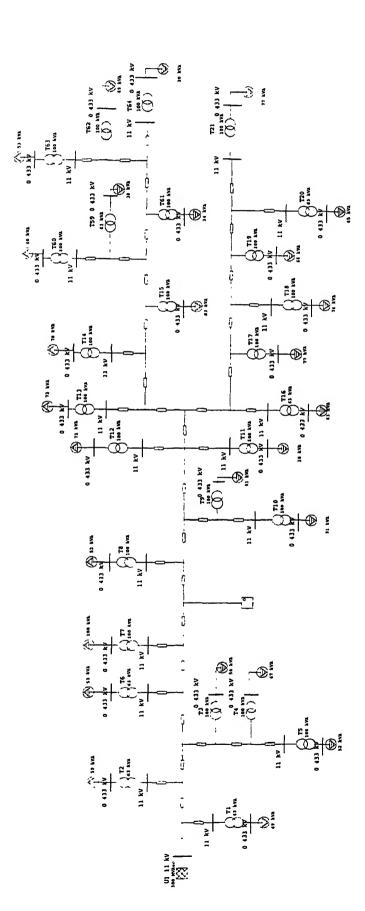


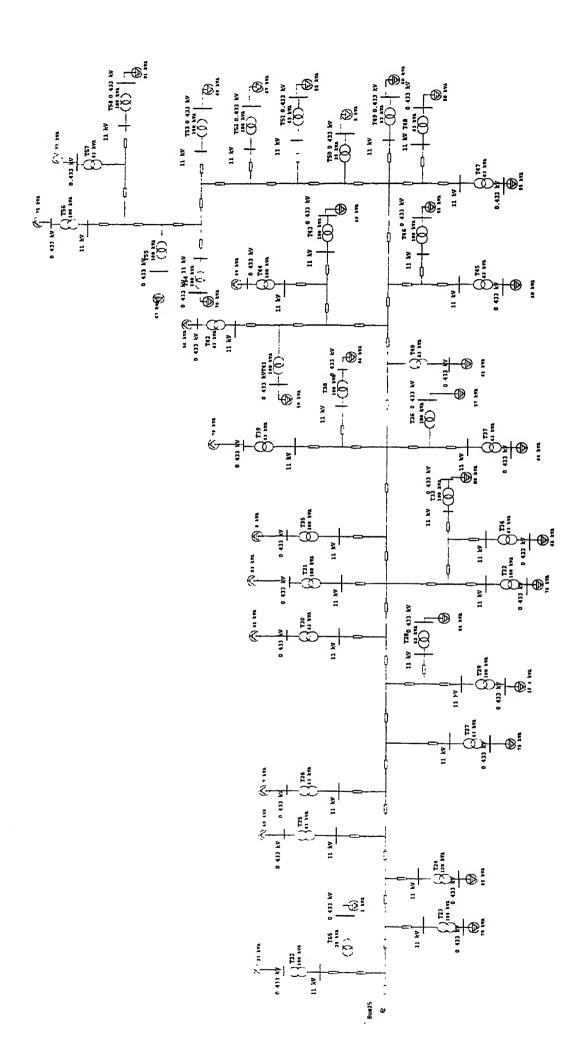
Project File: Rajkamal

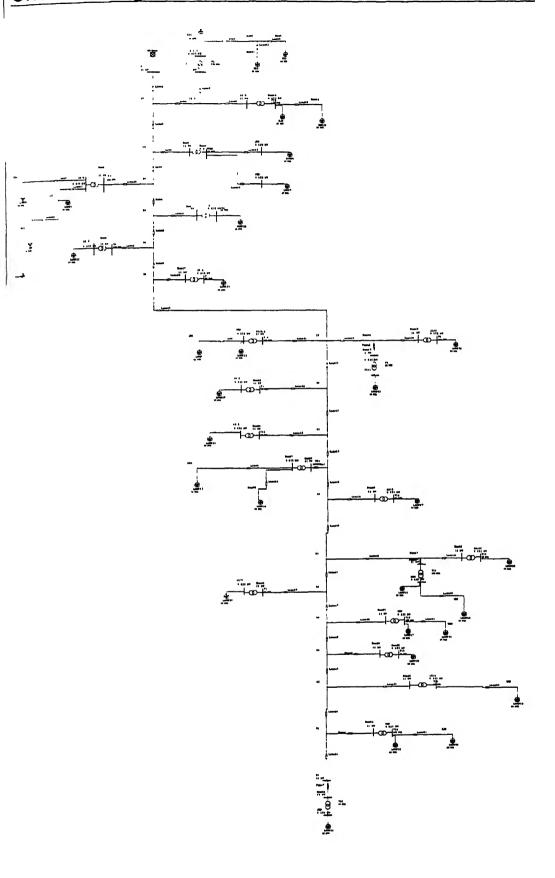
14:07:56 Jul 03, 2002

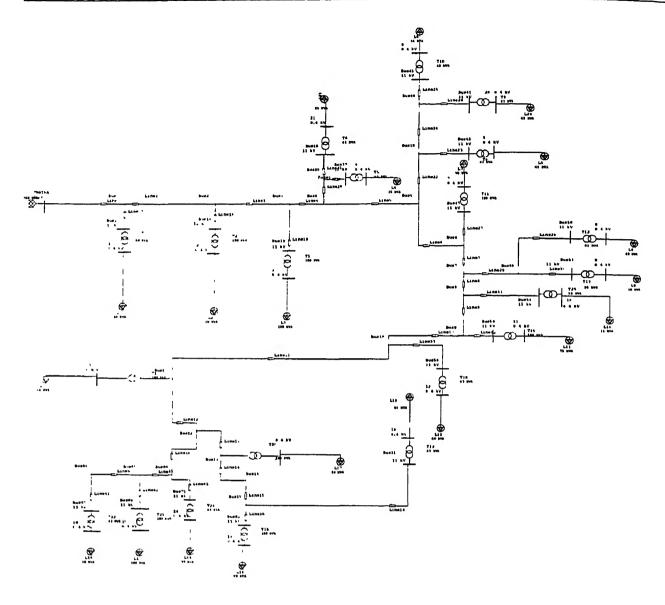
page 1

One-Line Diagram - OLV1

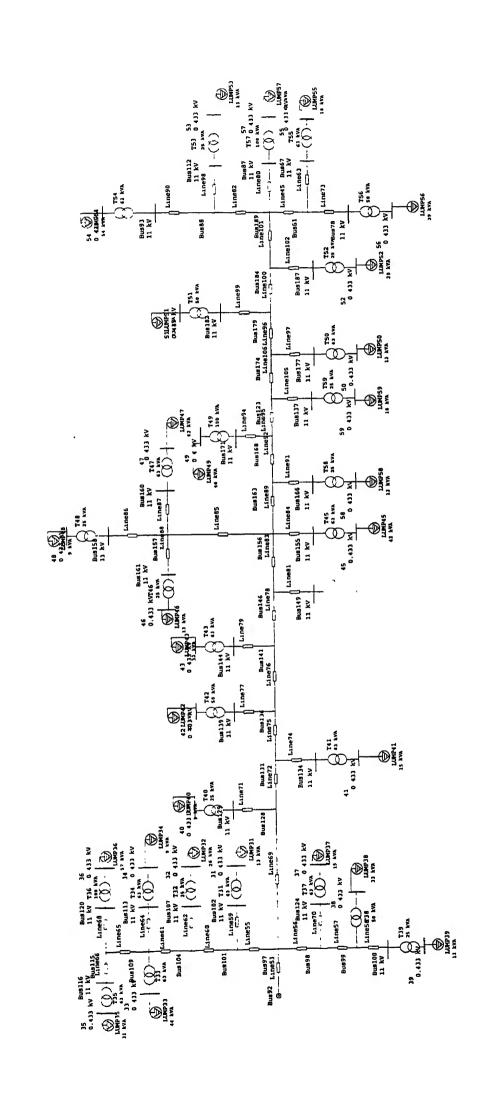




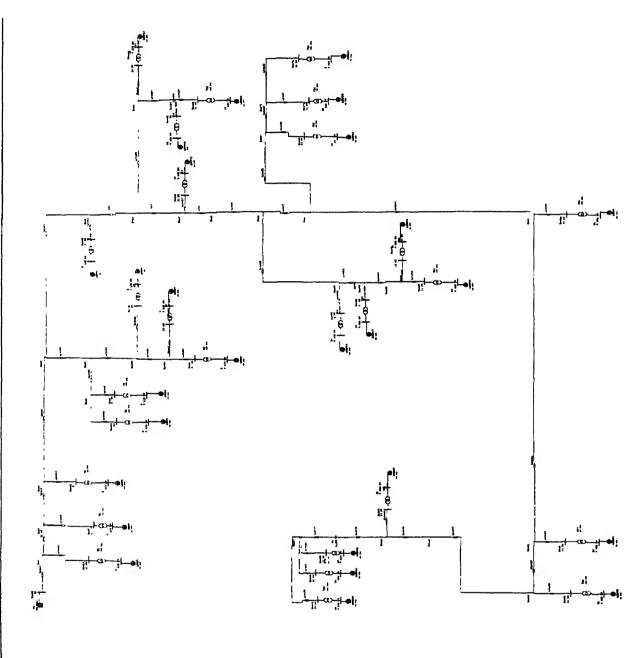


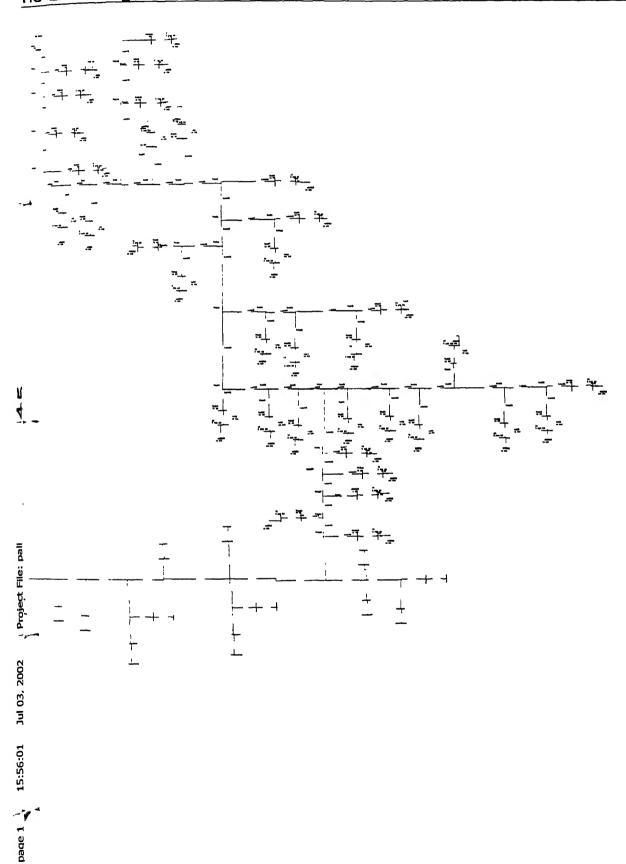


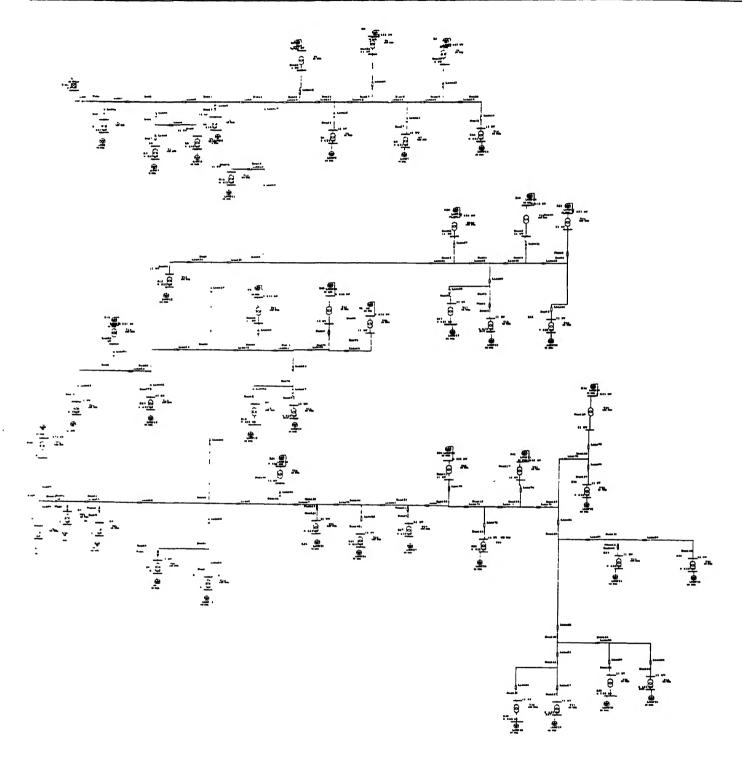
page 1

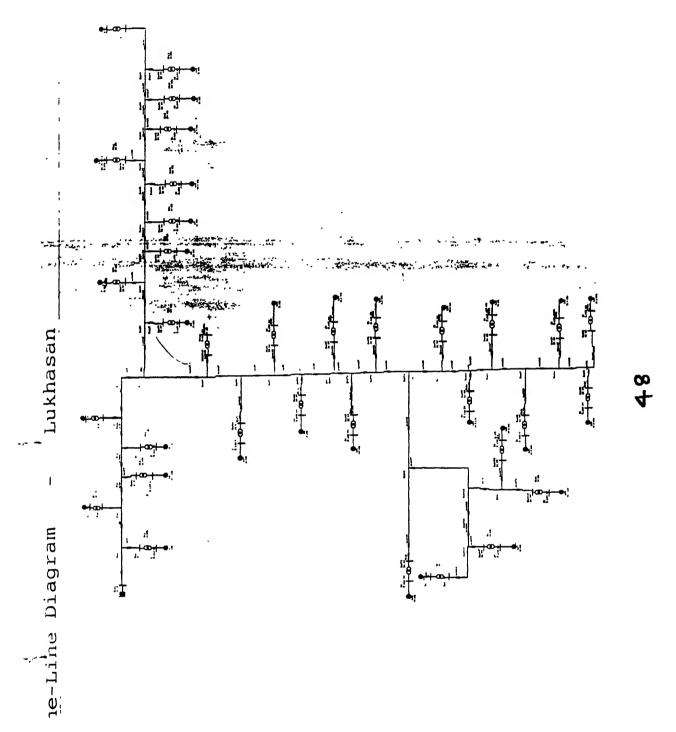


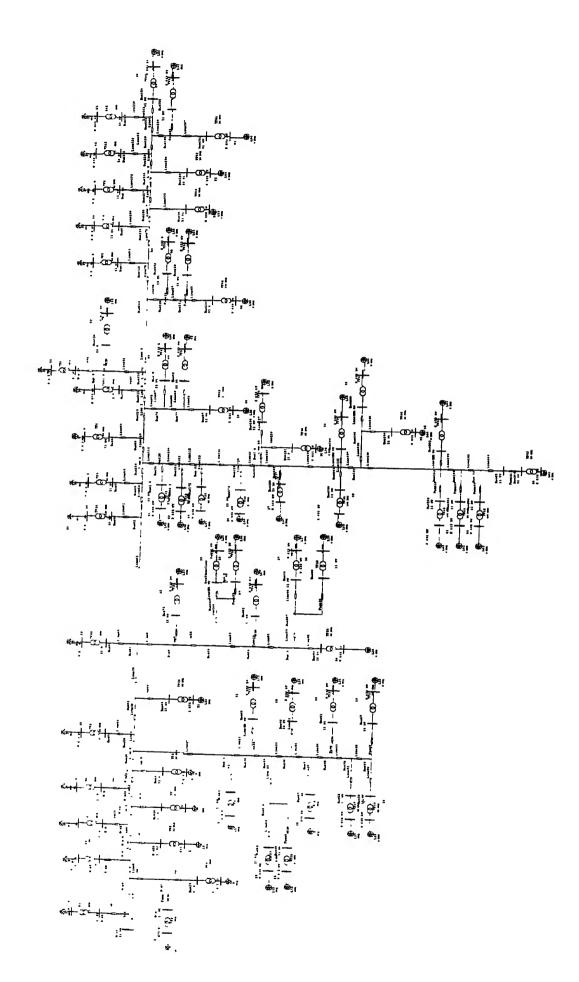
page 1

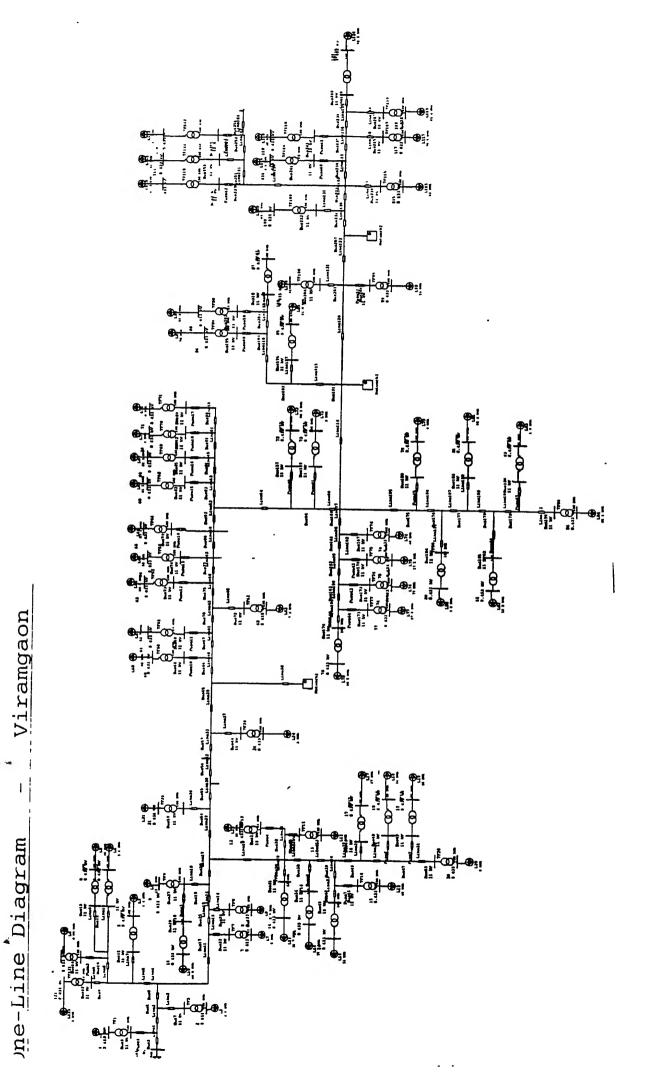












Project File: Rohik11Kv

14:15:44 Jul 03, 2002

page 1

50

PowerStation

 Project:□
 3.0.2C

Contract: □

Filename:

Rajkamal

Engineer:

Study Case: LF

Page: □1 Date: □01-22-2002

SN: TATAENERGY

Revision: Base

Config.:

Normal

<u>Electrical Transient Analyzer Program</u>
<u>ETAP PowerStation</u>
Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Newton-Raphson Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: Rajkamal

Project Filename: Rajkamal
Output Filename: C:\etaps-3.0.2\PowerStn\Rajkamal\Untitled.lf1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bus(es):	3.34	1.76	3.77	88.41 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	3.34	1.76	3.77	88.41 Lagging
Total Motor Load:	3.06	1.48	3.40	89.99 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.27	0.28		
System Mismatch:	0.04	0.03		

PowerStation

koject:□ Location:□

3.0.2C

Page:□1

Location:
Contract:
Engineer:

Date: □01-18-2002 SN: □TATAENERGY

Revision: ☐ Base

Study Case: LF

Filename. 🗆 Pilludara

Config.: □Normal

Electrical Transient Analyzer Program ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Gauss-Seidel Method

Maximum Number of Iteration: 9000

Precision of Solution: 0.000001 MW and Mvar

Load Flow Acceleration Factor: 1.45

System Frequency: 50.00
Unit System: Metric
Project Filename: Pilludara

....

Output Filename: C:\etaps-3.0.2\PowerStn\Pilludara\Untitled.lf1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF	
Swing Bus(es):	3.89	2.12	4.43	87.81 Lagging	•
Generators:	0.00	0.00	0.00	100.00 Lagging	
Total Demand:	3.89	2.12	4.43	87.81 Lagging	
Total Motor Load:	3.48	1.69	3.87	90.00 Lagging	
Total Static Load:	0.00	0.00			
Apparent Losses:	0.41	0.43			
System Mismatch:	0.06	0.04			

PowerStation

Project: ☐

Location:

Contract:□

Engineer: []

Filename: Clamipura

3.0.2C

Study Case: UF

Page:□1 Date: CJ01-19-2002

SN: DTATAENERGY

Revision: Base

Config.: DNormal

Electrical Transient Analyzer Program ETAP PowerStation

Load Flow Analysis Loading Category: Design Normal Loading

Method of Solution: Newton-Raphson Method

Maximum Number of Iteration: 5

Precision of Solution. 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric

Project Filename: Laxmipura
Output Filename: D:\etpdata\Laxmipura\Untitled.lf1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bus(es):	2.53	0.13	2.85	88.85 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	2.53	1.31	2.85	88.85 Lagging
Total Motor Load:	2.21	1.05	. 2.45	90.25 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.29	0.24		
System Mismatch:	0.00	0.00		

Page:□1

3.0.2C Date: 01-19-2002

SN: **TATAENERGY**

Revision: Base

Study Case: LF

Config.: □Normal

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Electrical Transient Analyzer Program

ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Swing Generator Load Total umber of Buses: 1 0 81 82 XFMR2 XFMR3 Reactor Line/Cable **Impedance** Tie PD Total umber of Branches: 0 53

ethod of Solution: Newton-Raphson Method

aximum Number of Iteration: 5

recision of Solution: 0.001000 MW and Mvar

ystem Frequency: 50.00 nit System: Metric roject Filename: madhi

utput Filename: D:\etpdata\madhi\Untitled.if1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bus(es):	1.00	0.65	1.19	84.07 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	1.00	0.65	1.19	84.07 Lagging
Total Motor Load:	0.97	0.60	1.14	85.00 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.04	0.05		
System Mismatch:	0.00	0.00		

Number of Iterations: 2

Project:□

Location:
Contract:
Engineer:

3.0.2C

Page:□1

Date: □01-15-2002 SN: □TATAENERGY

Revision:□Base

Study Case: LF

Filename: DBileswarpura

Config.: □Normal

Electrical Transient Analyzer Program ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Newton-Raphson Method

Maximum Number of Iteration: 99

Precision of Solution: 0.000100 MW and Mvar

System Frequency: 50.00 Unit System: Metric

Project Filename: Bileswarpura

Output Filename: D:\etpdata\Bileswarpura\Untitled.lf1

	MW	Mvar	MVA	% PF
Swing Bus(es):	1,01	0.53	1.14	88.58 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	1.01	0.53	1.14	88.58 Lagging
Total Motor Load:	0.97	0.47	1.07	90.00 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.04	0.06		
System Mismatch:	0.00	0.00		

3 0 2C

Page. 3

Date: 02-02-2002

TATAENERGY

Revision: Base Config.: Normal

Study Case LF

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bus(es)	1.548	0.715	1.705	90.79 Lagging
Generators.	000	0.000	0.000	100.00 Lagging
Total Demand.	1.548	0.715	1.705	90.79 Lagging
Total Motor Load:	1.514	0.648	1.647	91.94 Lagging
Total Static Load:	0.000	0.000		
Apparent Losses:	0.034	0.067		
System Mismatch:	0.075	0.027		

Number of Iterations: 1

Project: □

Location: □ 3.0.2C

Contract:

Filename:

Meherpura

to

Page: ☐ 1 Date: ☐ 01-15-2002 SN: ☐ TATAENERGY

Revision: □Base

Study Case: LF

Config.: □Normal

Electrical Transient Analyzer Program ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Gauss-Seidel Method

Maximum Number of Iteration: 9000

Precision of Solution: 0.000000 MW and Mvar

Load Flow Acceleration Factor: 1.45

System Frequency: 50.00
Unit System: Metric
Proved Flegorom: Mehanic

Project Filename: Meherpura
Output Filename: C:\etaps-3.0.2\PowerStn\Meherpura\Untitled.lf1

	MW	Mvar	MVA	% PF
Swing Bus(es):	1.80	1.21	2.17	82.93 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	1.80	1.21	2.17	82.93 Lagging
Total Motor Load:	1.69	1.05	1.98	85.00 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.11	0.17		
System Mismatch:	0.00	0.00		

Project:□

Engineer: 🗆

Location:

Contract:□

Filename: □pali

3.0.2C

Page:□1

Date: □01-16-2002

SN: CITATAENERGY

Revision: □Base

Study Case: LF

Config.: □Normal

Electrical Transient Analyzer Program

ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Newton-Raphson Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: English Project Filename: pali
Output Filename: D:\PowerStn\pali\Untitled.if1

	MW	Mvar	MVA	% PF	
Swing Bus(es):	0.99	0.51	1.11	88.98 Lagging	
Generators:	0.00	0.00	0.00	100.00 Lagging	
Total Demand:	0.99	0.51	1.11	88.98 Lagging	
Total Motor Load:	0.95	0.46	1.05	90.00 Lagging	
Total Static Load:	0.00	0.00			
Apparent Losses:	0.04	0.05			
System Mismatch:	0.00	0.00			

Project:□ Page:□1

Location: 3.0.2C Date: □01-15-2002 Contract: SN: CITATAENERGY

Revision: DBase

Engineer: [] Study Case: LF

Filename: 🗆 matu Config.:

Normal

Electrical Transient Analyzer Program ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Newton-Raphson Method

Maximum Number of Iteration: 99

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric

Project Filename: matu
Output Filename: D:\PowerStn\matu\Untitled.if1

	MW	Mvar	MVA	% PF
Swing Bus(es):	2.56	1.96	3.23	79.44 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	2.56	1.96	3.23	79.44 Lagging
Total Motor Load:	2.04	1.27	2.40	84.84 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.05	0.69		
System Mismatch:	0.08	0.03		

Project:□ Page:□1

 Location: □
 3.0.2C
 Date: □01-17-2002

 Contract: □
 SN: □TATAENERGY

 Engineer: □
 Revision: □Base

Study Case: LF

Filename: □majadar Config.: □Normal

Electrical Transient Analyzer Program ETAP PowerStation

Load Flow Analysis

Loading Category: Design Normal Loading

Method of Solution: Newton-Raphson Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: English Project Filename: majadar

Output Filename: D:\PowerStn\majadar\Untitled.if1

	MW	Mvar	MVA	% PF
Swing Bus(es):	1.76	0.91	1.98	88.82 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	1.76	0.91	1.98	88.82 Lagging
Total Motor Load:	1.68	0.81	1.87	90.00 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.08	0.10		
System Mismatch:	0.01	0.00		

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Page.

9 02-03-2002

Date: SN:

TATAENERGY

Revision: Base

Config. Normal

Study Case: LF

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bustes):	1.178	0.538	1.294	90 97 Lagging
Generators	.000	0.000	0.000	100.00 Lagging
Total Demand.	1.178	0.538	1.294	90.97 Lagging
Total Motor Load:	1.126	0.480	1.224	92.00 Lagging
Total Static Load:	0.000	0.000		
Apparent Losses:	0.051	0.058		
System Mismatch:	0.010	0.008		

Number of Iterations: 2

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tosect scattern	11 x Rohika teeder From 66 Kx From Salajda S/S	PowerStation 3.0.2C	Page: Date:	12 02-02-2002
entract			SN:	TATAENERGY
ingmeet.		Study C ≈e. LF	Revision:	Base
tiename	RahikHKv	,	Config.:	Normal i

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

_	MW	Mvar	MVA	% PF
Swing Bus(es).	1.278	0.596	1.411	90.62 Lagging
Generators:	.000	0.000	0.000	100.00 Lagging
Total Demand:	1.278	0.596	1.411	90.62 Lagging
Total Motor Load:	1.201	0.512	1.306	92.00 Lagging
Total Static Load:	0.000	0.000		
Apparent Losses:	0.077	0.085		
System Mismatch:	0.016	0.010		

Number of Iterations: 2

Project:□

Location: ☐ 3.0.2C

Date: 101-15-2002 SN: TATAENERGY

Revision: □Base

Engineer:

Study Case: LF

Filename: GDDC

Config.:

Normal

Electrical Transient Analyzer Program
ETAP PowerStation
Load Flow Analysis
Loading Category: Design
Normal Loading

Method of Solution. Newton-Raphson Method

Maximum Number of Iteration: 99

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: GDDC

Project Filename: GDDC
Output Filename: D:\PowerStn\GDDC\Untitled.ll1

	kw	kvar	kva	% PF
Swing Bus(es):	4042.10	2198.53	4601.39	87.80 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	4042.10	2198.53	4601.39	87.76 Lagging
Total Motor Load:	3544.60	1926.80	4034.50	87.90 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	497.50	271.73		
System Mismatch:	0.08	0.03		

3 0 20

Page.

15

Date:

02-02-2002

TATAENERGY

SN:

Revision: Base

Study Case: LF

Config.: Normal

VIRAMGAM

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bus(es)	4.188	2.072	4.673	89.63 Lagging
Generators:	.000	0.000	0.000	100.00 Lagging
Total Demand:	- 4.188	2.072	4.673	89.63 Lagging
Total Motor Load:	3.588	1.558	3.912	91.72 Lagging
Total Static Load:	0.000	0.000		
Apparent Losses:	0.600	0.514		
System Mismatch:	0.057	0.033		

Number of Iterations: 2

Energy sent and consumption for the Identified feeders during the study period (sample case)

Sr. No	Feeder	Circle	Energy Sent Transformer out kWh Consumptio kWh	Transformer Consumption KWh	Billed Energy kWh	Agricultural Consumption kWh	Total Consumption kWh
				Urban			
-	Rajkamal	Mehsana	4059000	3761301	3284110	00	3284110
				Rural			
2	Piludara	Mehsana	4718800	4158081	347834	3538872	3886706
3	Laxmipura	Mehsana	3724081	3376840	174779	3074647	3249426
4	Madhi	Mehsana	1612931	1546046	118690	1292438	1411128
5	B'Pura	Mehsana	1294630	1200240	188004	889849	1077853
9	Katpur	H'nagar	1749017	1339066	30236	1045529	1075765
7	Mahepura	H'nagar	2077987	1517235	27963	1444967	1472930
8	Pali	Palanpur	1849184	1762478	117613	1544804	1662417
6	Matu	Palanpur	2043579	1956056	55302	1625335	1680637
10	Majadar	Palanpur	1758509	1574176	178927	1372934	1551861
1-	Lukhasan	Palanpur	3840430	3260791	101934	2892576	2994510
12	Rohika	Sabarmati	1848584	1741849	367018	1215822	1582840
				Industrial			
13	GDDC	Sabarmati	4262361	4063274	3821685	26677	3848362
14	Viramgaon	Sabarmati	3820580	3400430	2887054	0	2887054

Energy losses (Total, HT and LT) during the Study period (Sample case)

Sr. No	Feeder	Circle	둗	HT Losses (kWh)	Wh)	רגרי	LT Losses (kWh)	(HN	Total Ene	Total Energy Losses (kWh)	(kWh)
			Total	Tech. Loss	Comm. loss	Total	Tech. Loss	Comm. loss	Total	Tech. Loss	Comm. loss
					Urban	=					
1	Rajkamal	Mehsana	297699	168655	129044	477191	72766	404425	774890	241421	533469
					Rura	I					
2	Piludara	Mehsana	560719	454121	106598	271375	195630	75745	832094	649751	182343
3	Laxmipura	Mehsana	347241	344950	2291	127414	44896	82518	474655	389846	84809
4	Madhi	Mehsana	66885	46115	20770	134918	18837	116081	201803	64952	136851
3	B'Pura	Mehsana	94390	54139	40251	122387	24613	97774	216777	78752	138025
9	Katpur	H'nagar	409951	55534	354417	263301	62965	200336	673252	118499	554753
2	Mahepura	H'nagar	560752	129958	430794	44305	29456	14849	605057	159414	445643
8	Pali	Palanpur	86706	79294	7412	100061	43243	56818	186767	122537	64230
6	Matu	Palanpur	87523	66597	20926	275419	133313	142106	362942	199910	163032
10	Majadar	Palanpur	184333	75614	108719	22315	18607	3708	206648	94221	112427
11	Lukhasan	Palanpur	579639	157986	421653	266281	97216	169065	845920	255202	590718
12	Rohika	Sabarmati	106735	90064	16671	159009	24414	134595	265744	114478	151266
					Industria	rlai					
13	GDDC	Sabarmati	199087	180895	18192	214912	90285	124627	413999	271180	142819
14	Viramgaon	Sabarmati	420150	344083	76067	513376	6408	506968	933526	350491	583035

Γ			4	_	2	7	2	89	0	9		0	,
-	IsrutlupingA GMnotiqmuznop (IscubA)		3144	2081	2922	2057	2935	2858	2810	2926	2111	3360	7000
During 2000-0	Assessed agricultural consumption kWh		11003970	5221229	4463458	2285662	3952562	6583401	5512379	5032560	5332190	3817304	0240057
	Energy sent out , kWh		9954106	5576985	5569940	3325379	6612057	9467500	6598508	6327578	6829684	5068177	4040504
iod	lsrutlubingA 9Mnotiqmusnob (lsubb)		1011	1225	846	801	922	627	787	945	544	2546	717
During study period	KMP sgricultural consumbtion	Rural	3538872	3074647	1292438	889849	1045529	1444967	1544804	1625335	1372934	2892576	4045000
During	Energy sent out,		4718800 3538872	3724081	1612931	1294630	1749017	2077987	1849184	2043579	1758509	3840430 2892576	49ABE94 424E922
	Actual Agricultural Load, HP(MRI)		3200	5209	1528	1111	1347	2303	1962	1720	2526	1136	1701
	Gircle		Mehsana	Mehsana	Mehsana	Mehsana	H'nagar	H'nagar	Palanpur	Palanpur	Palanpur	Palanpur	Caharmati
	Tebee T		1 Piludara	2 Laxmipura	3 Madhi	4 B'Pura	5 Katpur	6 Mahepura	7 Pali	8 Matu	Majadar	Lukhasan	Pohika
	Sr. No		1	2	3	4	5	9	7	æ	တ	10	11

Number of Agricultural consumers connected on selected feeders DTs and LT-HT ratio

Feeder Name	Number of Transformer with one Ag consumer	Number of Transformer with two Ag consumers	Number of Transformer with more than two Ag consumers	Total HT Length	Total LT length	LT/HT ratio
		R	Rural			
Piludara	53	1	•	35.12	119.41	3.4
Laxmipura	51	1	1			
Madhi	11	9	2	7.7	2.31	0.3
B'Pura	11	3	3	14.1	8.46	9.0
Katpur	11	1	16	12.48	6.24	0.5
Mahepura	23	13	22	20.7	12.42	9.0
Pali	20	•		3.7	0.74	0.2
Matu	6	7	30	27.49	21.99	9.0
Majadar	18	6	11	19.37	69.6	0.5
Lukhasan	14	9	13	17.67	7.07	0.4
Rohika	14	9	13	17.67	8.84	9.0

Лајадаг	2	-	13	17			ĕ	
WaM	12	0	17	12			46	
ilsq	-	0	9	19	-		27	
Mahepura	16	6	88	9			57	
Кафиг	ဖ	4	22	4			46	
B1u9'8	1	3	10	8			22	
idbsM	0	5	8	8			21	
Laxmipura	0	4	35	13			25	
Piludara	က		22	40			65	

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Viramgaon

Rohika

гпкрагар

Capacity/feeders

Capacity wise number of transformers on selected feeders

9

Feeder	Meter No	Connected load	Feeder Meter No Connected load Operating Load Difference % Difference	Difference	% Difference
!		Ö	Central Zone		
B'pura		1			
-	23034	22.38	41.40	19.02	85%
2	23142	14.92	81.00	80.99	443%
3	23119	22.38	36.00	13.62	61%
4	22436	26.11	67.50	41.39	159%
5	905532	22.38	36.00	13.62	61%
9	905228	22.38	35.10	12.72	57%
7	22407	41.03	90.00	48.97	119%
8	23140	22.38	45.00	22.62	101%
6	22435	44.76	72.00	27.24	61%
10	23009	22.38	41.40	19.02	85%
Laxmipura					
-	21958	38.79	58.00	19.21	50%
2	21625	46.25	65.00	18.75	41%
3	22297	37.30	60.00	22.70	61%
4	23091	46.25	99.00	19.75	43%
5	23074	26.11	40.00	13.89	53%
9	22227	29.84	48.00	18.16	61%
7	GEB01898	22.38	33.01	10.63	48%
8	GEB01920	22.38	33.25	10.87	40%
Madhi					2
-	20/5	52.22	06	37.78	72%
7	26/2	14.92	46.8	31.88	214%
9	33/a/1	52.22	79.2	26.98	52%
4	59/1	29.84	72.9	43.06	144%
5	62/7	22.38	37.8	15.42	%69
9	64/2	22.38	95.4	73.02	326%
7	99	11.19	30	18.81	168%
~	- 68/6 -	00.00	8		

Feeder	Meter No	Connected load	Operating Load	Difference	% Difference
σ	76	30.586	68.4	37.81	124%
5	2 8	26.11	40	13.89	23%
2	;				
Majadar					
-	1959599	18.65	34.58	15.93	85%
Mahepura					
1	1960254	11.19	36.74	25.55	228%
2	1960257	7.46	39.91	32.45	435%
3	1960170	11.19	47.68	36.49	326%
4	1960042	14.92	34.51	19.59	131%
	1960127	33.57	53.31	19.74	29%
9	1960174	11.19	15.92	4.73	42%
-	1960249	14.92	27.21	12.29	82%
Pali					
-	23894	46.25	00'96	49.75	108%
2	23893	53.71	98.00	44.29	82%
3	23629	53.71	00.96	42.29	79%
4	23864	44.76	104.00	59.24	132%
	23964	6.71	18.00	11.29	168%
9	24006	3.73	13.00	9.27	249%
7	23960	22.38	44.00	21.62	81%
8	23962	7.46	24.00	46.54	624%
6	23632	55.95	100.00	44.05	%62
10	23970	5.97	16.00	10.03	168%
11	23961	38.79	68.00	29.21	75%
Piludara				0.00	2007
-	21502	46.25	73.71	27.40	9/BC
0	21506	38.79	59.94	21.15	%CC

reeder		Connected load	Operating Load	Dinerence	
60	21896	41.03	60.75	19.72	48%
4	21315	22.38	33.21	10.83	48%
5	21387	44.76	67.23	22.47	20%
9	22224	14.92	71.28	56.36	378%
7	22527	38.79	55.08	16.29	42%
8	22232	46.25	73.71	27.46	29%
Matu					
-	959670538- 22549	9.41	26.00	16.59	176%
2	959670506- 22548	11.19	17.00	5.81	, 52%
3	94690-22552	14.92	22.00	7.08	47%
4	959670503- 22550	31.71	00:09	28.30	%68
ည	959670511- 22505	11.41	32.00	20.59	180%
Rohika					
-	1961130	16.4	20.0	3.6	22.0%
2	1961129	22.4	39.2	16.9	75.4% ·
ဗ	1961126	41.0	100.0	59.0	144.1%
4	90270	18.6	24.8	6.2	33.3%
5	1961111	11.2	20.5	9.3	83.4%
9	1960118	14.9	30.0	15.1	101.3%
7	1961109	22.4	32.0	9.7	43.2%
8	1960022	38.6	70.0	31.4	81.4%
6	90315	16.8	24.2	7.5	44.5%
10	1961131	26.1	37.0	10.9	41.9%
11	1961129	22.4	37.5	15.2	67.8%
12	90287	41.0	53.5	12.5	30.4%
13	1960116	18.6	29.0	10.4	55.7%
14	22449	48.4	62.2	13.8	28.5%

		Augusto de		
15 1960119	7.5	0.69	61.6	826.2%
16 22418	22.4	40.3	18.0	80.3%
17 24027	18.6	28.0	9.4	20.3%
18 1961168	22.4	30.3	8.0	35.7%
19 1960216	18.6	25.0	6.4	34.2%
20 1960003	5.6	9.0	3.4	61.1%
21 1960007	9.3	25.0	15.7	168.5%
22 1960233	11.2	26.6	15.5	138.3%
23 1961132	22.4	36.0	13.7	61.1%
Lukhasan				
1 23943	11.2	23.1	11.9	82.8%
2 23769	18.7	36.0	17.4	73.7%
3 23693	33.6	48.5	14.9	30.0%
4 23744	14.9	30.0	15.1	81.0%
5 23816	18.7	30.0	11.4	44.8%
6 23819	70.9	108.3	37.4	37.5%
7 23757	26.1	53.0	26.9	82.7%
8 23776	18.7	37.2	18.6	79.7%
9 23830	31.3	48.0	16.7	. %6'28
10 23763	11.2	42.6	31.4	242.2%
11 23746	29.8	40.5	10.7	22.1%
12 2369	22.4	55.7	33.4	124.2%
13 23893	41.0	69.2	28.2	51.9%
Katpur				
1 1959861	18.7	29.0	10.4	55.5%
2 1959517	11.2	15.0	3.8	.34.0%
3 1959859	11.2	22.0	10.8	%9.96
4 1959520	11.2	16.0	4.8	43.0%
5 1959524	11.2	. 15.0	3.8	34.0%
6 1959683	45.9	53.0	7.1	15.5%
7 1959701	36.6	74.0	37.4	102.4%

S
4

1961052	69.0	86.0	17.0	24.6%
1959521	14.9	27.0	12.1	81.0%
1959863	37.3	59.0	21.7	58.2%
1959518	11.2	15.0	3.8	34.0%
1959547	11.2	14.0	2.8	25.1%
1959697	44.8	67.0	22.2	49.7%
1959699	11.2	22.0	10.8	%9'96
1961072	69.0	90.0	21.0	30.4%
1961069	56.0	83.0	27.1	48.3%
1961070	37.3	100.0	62.7	168.1%
1959862	22.4	32.0	9.6	43.0%
1959685	39.2	54.0	14.8	37.9%
1959702	46.6	65.0	18.4	39.4%
1959864	18.7	27.0	8.4	44.8%
1961051	74.6	104.0	29.4	39.4%
1960665	65.3	105.0	39.7	%6.09
1959859	11.19	20.00	8.81	79%
	1959863 1959518 1959547 1959699 1961072 1961070 1959862 1959864 1959864 1959864 1959864 1959864 1959864		37.3 11.2 44.8 11.2 69.0 56.0 56.0 37.3 22.4 39.2 46.6 18.7 74.6 65.3	37.3 59.0 11.2 15.0 11.2 14.0 44.8 67.0 11.2 22.0 69.0 90.0 56.0 83.0 37.3 100.0 22.4 32.0 39.2 54.0 46.6 65.0 18.7 27.0 74.6 105.0 65.3 105.0

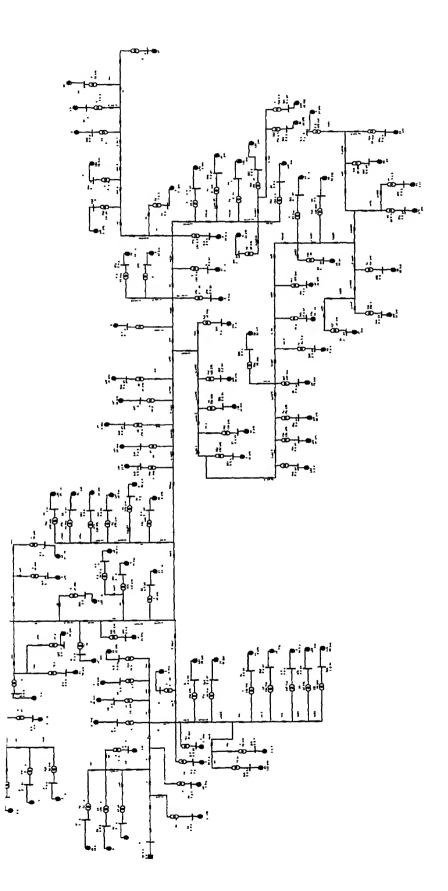
Feeder	Total number of Transformer	Number of Transformer with	Percentage
		Higher Load	
		Ruraí	
Piludara	65	8	12%
Laxmipura	52	80	15%
Madhi	21	10	48%
B'Pura	22	10	45%
Katpur	46	24	25%
Mahepura	22	7	12%
Pali	27	11	41%
Matu	46	ಬ	11%
Majadar	36	-	3%
Lukhasan	34	13	38%
Rohika	58	23	40%

Category wise consumption for the North Zone during year 2000-01

Category Total Total	Total Sent out	Total billed	Agricultural Total assessment Cons	umption	Agricultural Total Consumption/ techn HP		Total Total commercial energy	Total energy loss
	M	NM MU	DW.	M		loss	O.W.	W
Rural	7630	130	6647	6777	2377	989	167	853
Urban	718	526		526		47	145	192
Industrial	966	811		811		78	107	185
НТЕХ	777	969		969		-	80	81
Total	10121	2163	6647	8810	2377	812	499	1311

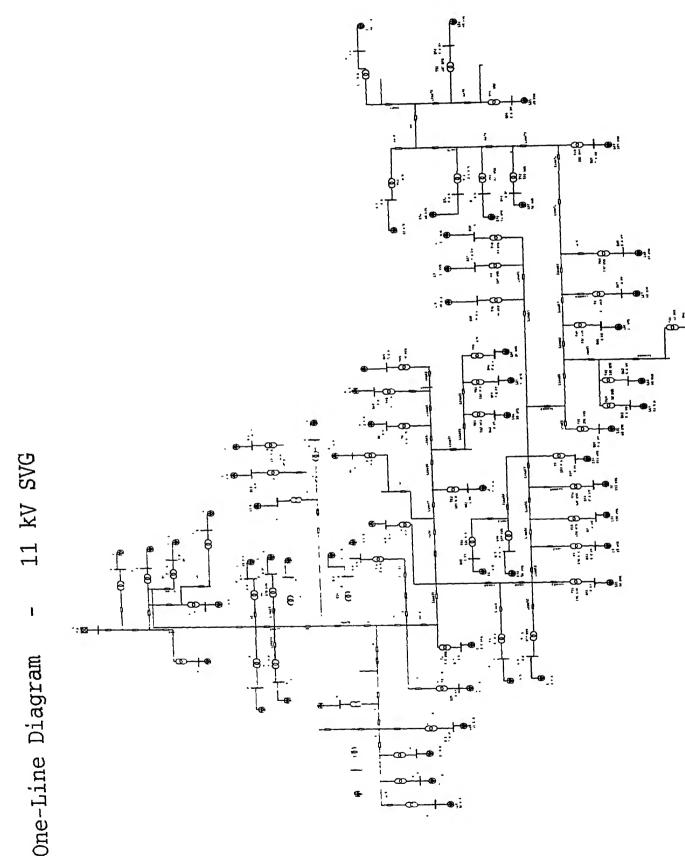
Distribution System Central Zone

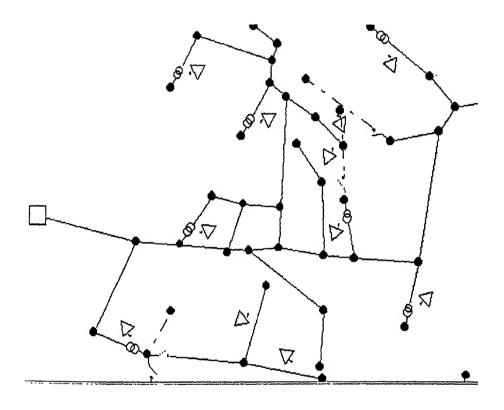
- ⇒ One Line Diagram of the 11 kV network
- ⇒ Load Flow Summary Report
- ⇒ Energy Losses and Agricultural Consumption
 Sample Case
- ⇒ Transformers and Agricultural Consumers
- ⇒ Sanctioned Demand Analysis
- \Rightarrow Summery for the Zone

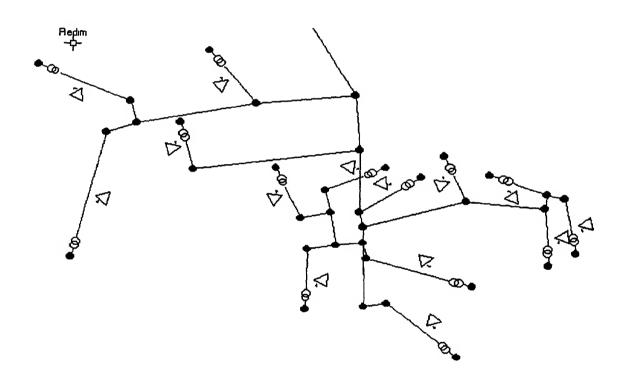


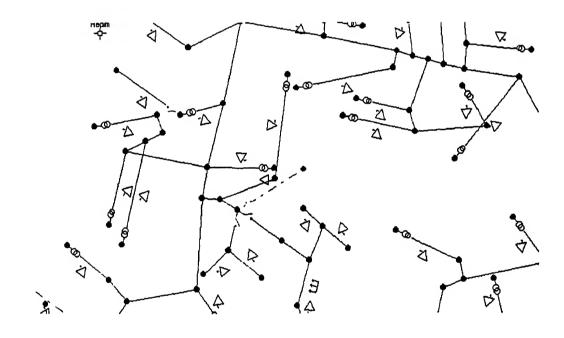
16:37:00 Jul 03, 2002 Project File: Anandcity-I

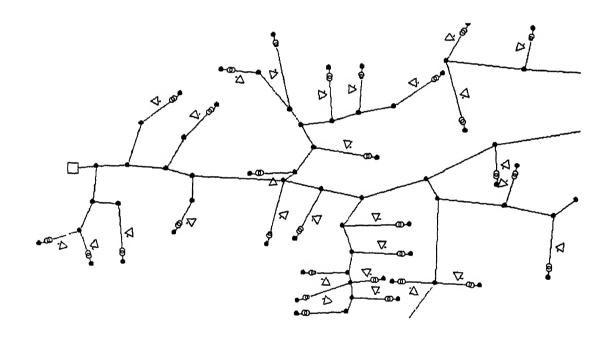
page 1

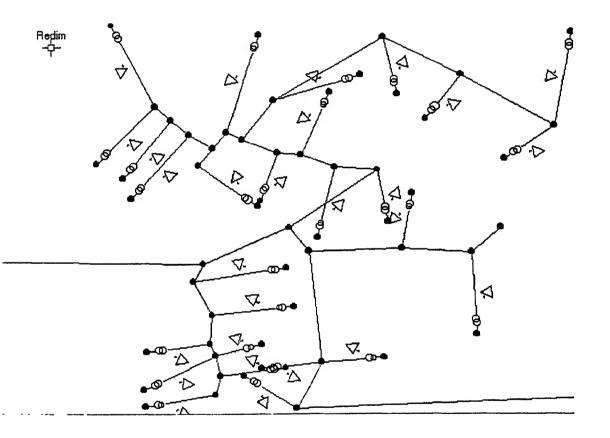


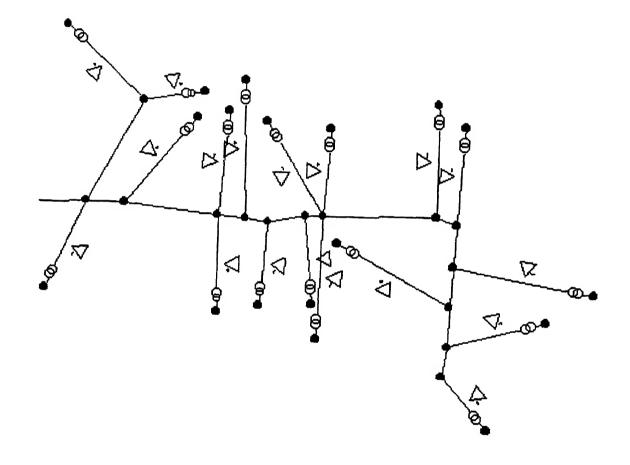


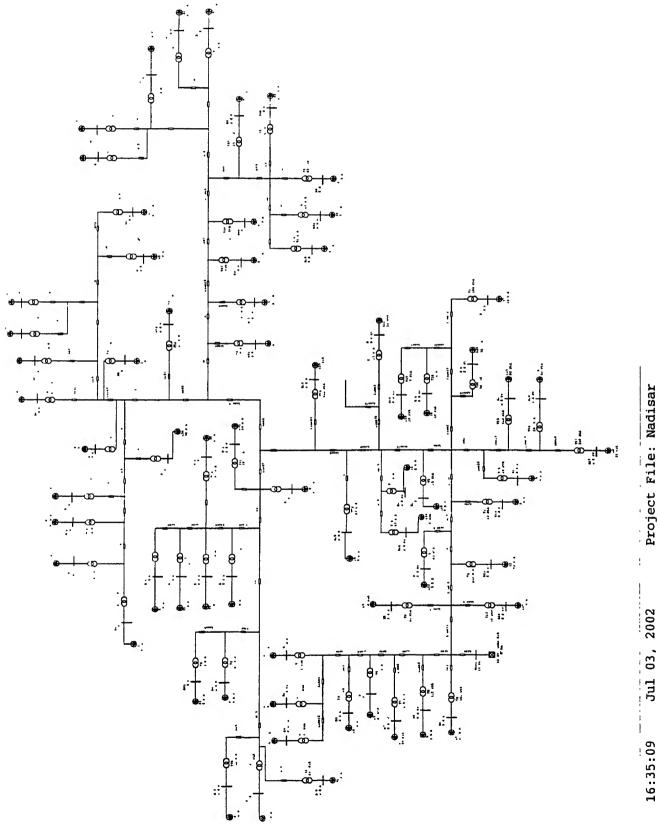






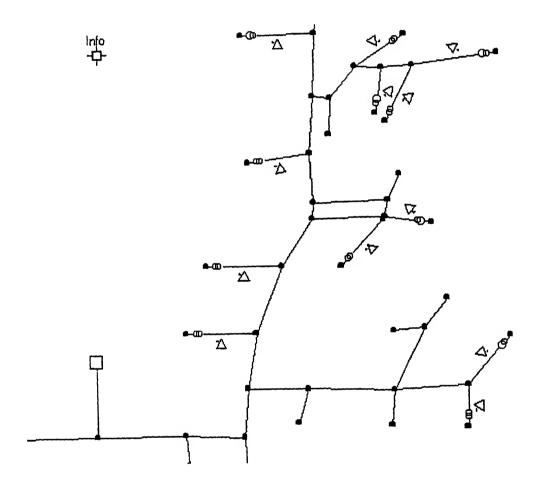




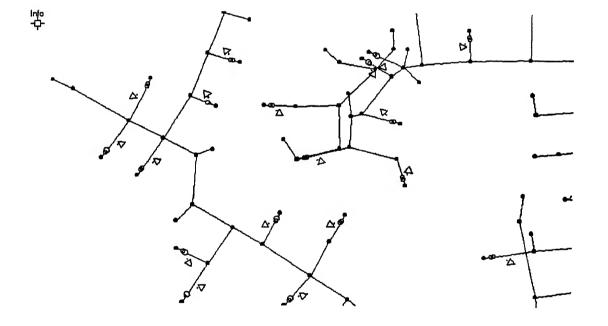


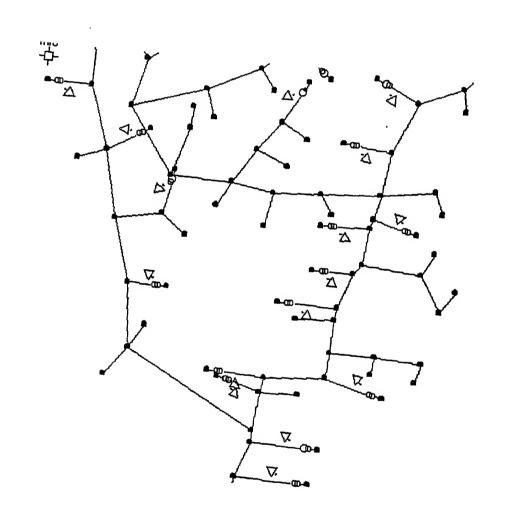
Project File: Nadisar

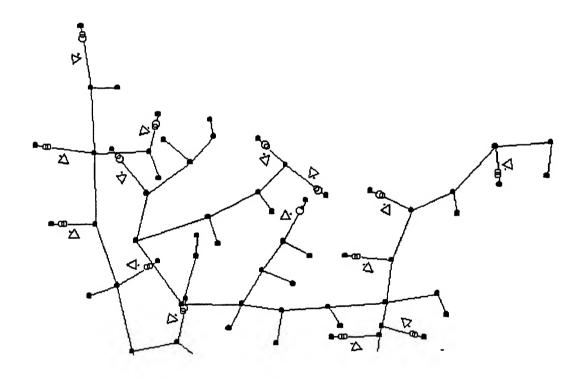
86



One Line Diagram of Feeder : Ranoli







Project:

Location:

4.0.0C

Page: 1

Date: 12-03-2002

Contract:

Engineer.

Filename: Anandcity-I

Study Case: LF

SN: TATAENERGY

Revision: Base

Config.: Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category: Design

Load <u>Total</u> Generator Swing 216 215 1 Number of Buses:

Number of Branches:

Method of Solution: Newton-Raphson Method

Maximum No. of Iteration: 99

Precision of Solution. 0.000100

System Frequency: 50.00

Unit System: Metric

Project Filename: Anandeity-I

Output Filename: C:\ETAP 400\PowerStation\GEB\Anandcity-I\Anand.lfl

Line/Cable XFMR3 XFMR2 Reactor 0 125 0 90 0

Impedance 0

Tic PD

Ις

	MW	Mvar	MVA	% PF
Swing Bus(es):		4.247	2.771	5.071
enerators:		0.000	0.000	0.000
otal Demand:		4.247	2.771	5.071
otal Motor Load.		4.091	2.498	4.793
otal Static Load.		0.001	0.000	
Apparent Losses.		0.156	0.273	
System Mismatch.		0.000	0.000	

Project Location

4.0.0C

Page: 1

Date: 01-05-2002

Contract

SN: TATAENERGY

Revision: Base

ngmeer

Filename SVG

Study Case. LF

Config.: Normal

Electrical Transient Analyzer Program

ETAP PowerStation Load Flow Analysis

Loading Category: Design

Number of Buses

Swing 1

Generator 0

Load 141

<u>Total</u> 142

Number of Branches

XFMR2

Total 141

Method of Solution Newton-Raphson Method

Maximum No of Iteration: 99

Precision of Solution: 0 000100

System Frequency 50 00

Unit System: Metric

Project Filename SVG

XFMR3 Line/Cable Reactor Impedance Tie PD 61 0 0 80 0 0

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

% PF $\mathbf{M}\mathbf{W}$ MVA Mvar 2 271 3.756 79.65 Lagging Swing Bus(es) 2.992 Generators. 0.000 0.000 0.000 100.00 Lagging 3.756 Total Demand: 2.992 2.271 79.65 Lagging 2.109 3.596 81.00 Lagging Total Motor Load. 2.913 Total Static Load. 0.000 0.000 0.079 0.162 Apparent Losses: 0.000 System Mismatch: 0.000

Project: 🗆

Filename: Gothaj

Location: []

Contract: Engineer: 🗆 3.0.2C

Page:□1 Date: 101-05-2002 SN: DTATAENERGY

Revision: DBase

Study Case: LF

Config.: □Normal

Electrical Transient Analyzer Program **ETAP PowerStation** Load Flow Analysis

Loading Category: Design Normal Loading

Number of Buses:

Number of Branches:

Swing XFMR2

50

Generator Load 120 XEMR3 Reactor

0

0

Total 121 Line/Cable 70

Impedance

Tie PD

Total 122

Method of Solution: Fast-Decoupled Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: Gotha

Output Filename: D:\GEBT&D\T&D\LTstudy\Central Zone\central\gothaj\Untitled.if1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

0

	MW	Mvar	MVA	% PF
Swing Bus(es):	1.67	0.91	1.90	87.93 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	1.67	0.94	1.90	87.93 Lagging
Total Motor Load:	1.55	0.75	1.73	89.95 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.12	0.25		
System Mismatch:	0.00	0.00		

Project:□ Location:

Contract:□ Engineer:

Filename:□Bhoj

3.0.2C

Page:□1 Date: □01-05-2002 SN: DTATAENERGY

Revision:□Base

Study Case: LF

Config.: □Normal

Electrical Transient Analyzer Program ETAP PowerStation Load Flow Analysis

Loading Category: Design Normal Loading

Swing Generator Number of Buses: 1 0 XEMR2 Number of Branches:

XFMR3

Load 194 Reactor

Total 195 Line/Cable 70

Impedance

Tie PD

Total 122

Method of Solution: Fast-Decoupled Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: Bhoj

Output Filename: D:\GEBT&D\T&D\LTstudy\Central Zone\Central\Bhoj\Untitled.lf1

	MW	Mvar	MVA		% PF
Swing Bus(es):	2.46	1.33	2.80	87.93	Lagging
Generators:	0.00	0.00	0.00	100.00	Lagging
Total Demand:	2.46	1.36	2.80	87.93	Lagging
Total Motor Load:	2.30	1.12	2.55	89.95	Lagging
Total Static Load:	0.00	0.00			
Apparent Losses:	0.17	0.25			
System Mismatch:	0.00	0.00			

Project:

Location:

Contract:

Filename, Nadisar

4.0.0C

Page: 1

Date: 05-01-2002

SN: TATAENERGY

Revision: Base

Config.: Normal

Engmeer:

Electrical Transient Analyzer Program

Study Case: LF

ETAP PowerStation

Load Flow Analysis

Loading Category: Design

Number of Buses:

Swing ı

Generator

Load 168

Total 169

Number of Branches.

XFMR2 XFMR3 67 0

Reactor 0

Line/Cable 99

Impedance 0

Tic PD 2

Method of Solution. Newton-Raphson Method

Maximum No. of Iteration: 99

Precision of Solution

0.000100

System Frequency: 60.00

Unit System: Metric

Project Filename Nadisar

	MW	Mvar	MVA	% PF	-
Swing Bus(es):	2.376	1.047	2.596	91.51	Lagging
Generators [.]	0 000	0.000	0.000	100.00	Lagging
Total Demand	2.376	1.047	2.596	91.51	Lagging
Total Motor Load:	2.177	0.858	2.340	93.03	Lagging
Total Static Load.	0.000	0.000			
Apparent Losses:	0.199	0.189			
System Mismatch.	0.000	0.000			

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ntract: 🛘

3.0.2C

Page:□1 Date: @01-05-2002

SN: DTATAENERGY

Revision: □Base

Total

122

Config.: []Normal

Impedance

Tie PD

Electrical Transient Analyzer Program

Study Case: LF

ETAP PowerStation Load Flow Analysis

Loading Category: Design

Normal Loading

Swing Generator Load Total lumber of Buses: 122 1 0 123 XEMR2 XEMR3 Reactor Line/Cable

*umber of Branches: Method of Solution: Fast-Decoupled Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: Ranoli

Subjut Filename: D:\GE8T&D\T&D\LTstudy\Central Zone\Central\Ranoli\Untitled.If1

	MW	Mvar	MVA	% PF
Swing Bus(es):	2.36	1.28	2.68	87.93 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Oemand:	2.36	1.31	2.68	87.93 Lagging
Total Motor Load:	2.24	1.09	2.49	89.95 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.11	0.08		
System Mismatch:	0.00	0.00		

Energy sent and consumption for the Identified feeders during the <u>study period</u> (sample case)

			Transformer	1	Billed Energy Agricultural	Agricultural	Total
Sr. No	Feeder		out kWh	_	kWh	Consumption kWh	Consumption kWh
	_						
				Urban			
			00,000	9007000	7167456	0	7167456
-	Anand City	Anand	10363126	9891770)	
	_						1303545
C	27.6	Anand	6766400	6512353	4393545		200001
7				Rural			
					1 550444	3184949	3743063
6	Cothoi	Anand	4555204	422//10	230114	21212	00011000
2	Country		0740070	3440740	223550	2643958	280/2087
4	Bhoj	Haroda	37 10072	2000	4045000	1473325	2518617
ľ	Nadisar	Godhra	5820520	ວິດວິວິ480	1040234	270011	
				Industrial			
			, 0, 2, 2,	1000004	4560320	0	4569320
G	Ranoli	Baroda	581/434	1000700	030004		1010093
,	Transpork	Baroda	1054545	1010093	1010093		200101
_	Idiopera	4					

Energy losses (Total, HT and LT) during the Study period (Sample case)

3											(LWh)
0. M.	Esader	Circle	토	HT Losses (kWh)	Wh)	נזר	LT Losses (kWh)	ر الآ	lotal Ene	lotal Energy Lusses (NVII)	(Manil)
01. IS	5555						ı	Т	Total	Tech	Comm.
			Total	Tech. Loss	Comm. loss	Total	Loss	loss		Loss	loss
					Urban				0405070	500717	2504953
-	Anand City	Anand	462898	415689	20208	2729772 275028 2454745	275028	2454/45	3192070	1060	2001002
	-							******		256327	2016527
C	S V S	Anand	254047	230560	23487	2118808	125/6/	1993041	23/2033	32005	
4					Rura	_					25.0
				00000	3	197678 76068	76068	408579	812141	363390	448750
c.	Gothai	Anand	327493	28/322	_	- 1	10054	530878	849164	274297	574867
	Phoi	Baroda	266932	231942	34989	+CC74 75779C	45334	033070	Ľ	755756	2546147
- 4	Madicar	Godhra	765041	475133	289907	289907 2536863 280622 2256240	280622	7520240		25.155	
2	Made				Industrial	trial					1
					1	055350	283312	283312 673049	1248113	523569	724544
ď	Ranoli	Baroda	291753	24025/		20000	2002			40050	4402
	Tonon	Baroda	44452	40050	4402	0	0	5	77444	20001	
,	Hallshow	200									
_											

သ	2			Sr. No	
Nadisar	Bhoj	Gothaj		Feeder	
Godhra	Baroda	Anand		Circle	
2239	2425	1711		Actual Agricultural Load, HP(MRI)	
5820520	3716672	4555204	יכו	Energy sent out , kWh	During
1473325	2643958	3184949	Rural	Assessed agricultural consumption kWh	During study period
859	1090	1861		Agricultural consumption/HP (Actual)	iod
9394415	9963420	5779000		Energy sent out , k W h	
2377971	7087756	4040615		Assessed agricultural consumption kWh	During 2000-01
1062	2923	2361		Agricultural consumption/HP (Actual)	

Number of Agricultural consumers connected on selected feeders DTs and LT-HT ratio

	 _	_	-		_			~~
LT/HT ratio		1.0	1.4	2.3		4.1	5.0	
Total LT length		33.54	45.46	152		67	35	
Total HT Length		35	32	29		16	7	
Number of Transformer with more than two Ag consumers	Rural	18	30	25	Industrial	•	•	
Number of Transformer with two Ag consumers	Ru	16	8	7	npul	•	•	
Number of Transformer with one Ag consumer		17	10	6		_		
Feeder		Bhoj	Gothai	Nadisar		Anand City 1	SVG	

Capacity/feeders Capacity wise number of transformers on selected feeders Total 4VA 25 50 75 100 200 250 300 400 Bhoj 22 = 62 Gothaj 22 17 5 9 Nadisar 68 32 2 4 2 2 Ranoli 16 94 26 2 2 **Anand City 1** 52 92 14 ယ SVG 6 2 62 00 ယ

List of meters on various feeders where operating load was found more than the sanctioned load

Feeder	Meter No	Connected load	Operating Load	Difference	% Difference
		ŭ	Central Zone		
Nadisar					
1	01960596	24.92	74.4	49.48	198.6%
2	01960337	55.95	96.99	11.01	19.7%
3	01960514	31.48	37.2	5.72	18.2%
4	01960590	22.38	35.34	12.96	27.9%
2	01960515	69.72	83.7	13.98	20.1%
9	01960344	52.22	74.4	22.18	42.5%
7	01959645	13.06	16.74	3.69	28.2%
8	01959648	14.92	16.74	1.82	12.2%
6	01960511	48.46	50.22	1.76	3.6%
10	01960465	44.76	74.4	29.64	66.2%
Gothaj					
-	1959988	11.19	15	3.81	34%
2	1959996	25.345	30	4.655	18%
3	1959963	19.023	22	2.977	16%
4	1959960	39.165	63	23.835	61%
2	1959959	18.32	27	8.68	47%
9	1961400	25.5132	32	6.4868	25%
7	1959954	7.46	15	7.54	101%
8	1959970	15.295	20	4.705	31%
6	1959972	18.65	35	16.35	88%
9	1959949	63.415	72	8.585	14%
=	1959971	16.785	20	3.215	19%
12	1959973	67.645	20	2.355	3%
13	1959967	14.92	20	5.08	34%
14	1959969	16.785	23	6.215	37%
15	1959966	37.3	44	6.7	18%
16	1959979	11.19	16	4.81	43%
17	1959941	44.83	ጃ	9.17	20%
18	1959980	11.19	15	3.81	34%
					1

	36%	23		43	\dashv	Bhoj
	38%	19		50	_	Gothai
	15%	10		68	-	Nadisar
_			Rural			
		oad	Higher Load			
	Percentage	er with		Total number of Transformer	급	Feeder
1	77.00	7	11.19	01960490	019	23
ł	39.00	w	29.84	01960357	019	22
1	49.00	4	46.03	01960639	019	21
1	26.50	N	15.92	01960572	019	20
1	41.00	4	33.57	01960493	019	19
i	27.30	2	14.92	01960535	019	18
i '	22.00	2	15.92	01960384	019	17
1	45.00	4	37.30	01960487	019	16
1	26.00	2	14.92	01959675	019	55
1	32.00	3	20.65	01959678	019	14
	30.00	ω	29.84	01960644	019	ಪ
	28.00	2	18.65	01960364	019	12
	27.13	2	11.19	01959673	019	=
	25.00	2	14.92	01960363	019	5
	46.00	4	41.03	01960361	019	9
	50.00	5	41.03	01960540	019	8
	48.00	4	29.84	1960538	196	7
1.	44.00	4	37.30	01960637	019	6
l	49.00	4	41.03	01960496	019	Ch.
	27.00	2	16.92	01960385	019	4
	40.00	4	29.84	01960533	019	ယ
	45.00	4	37.30	01960641	019	2
	48.00	4	41.03	01960640	019	-

Feeder

Meter No

Connected load

Operating Load

Difference

% Difference

Bhoj

1959955

18.65

22

3.35

18%

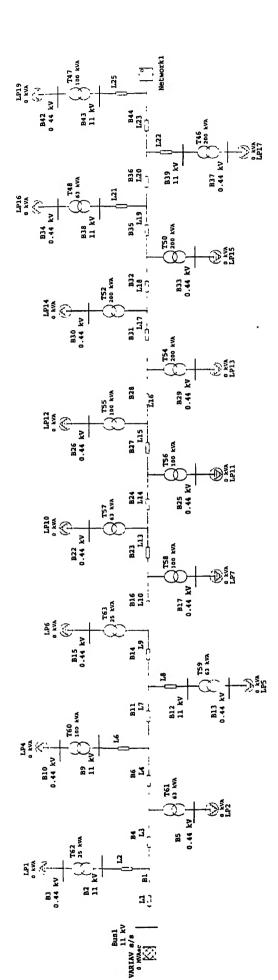
Category wise consumption for the Central Zone during year 2000-01

Category Total Total	Total	Total	Agricultural Total	Total	Agricultural Total		Total	Total
	Sent out billed energ	billed energy	assessment	assessment Consumption Consumption/ technical HP energy loss	Consumption/ HP		commercial energy loss loss	energy loss
	D#	DW.	MC	MU		MU	MU	2
Rural	1786	207	925	1132	1775	210	444	654
Urban	1417	868		898		96	423	519
Industrial	544	381		381		50	113	163
HTEX	279	247	0	247		ဗ	29	32
Total	4026	1733	925	2658	1775	358	1010	1368

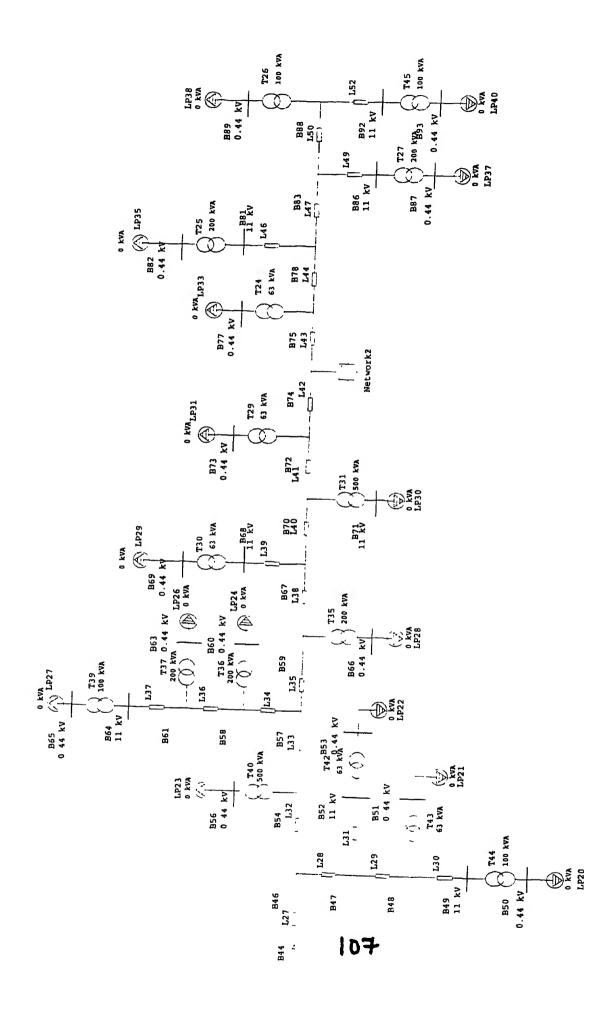
Distribution System South Zone

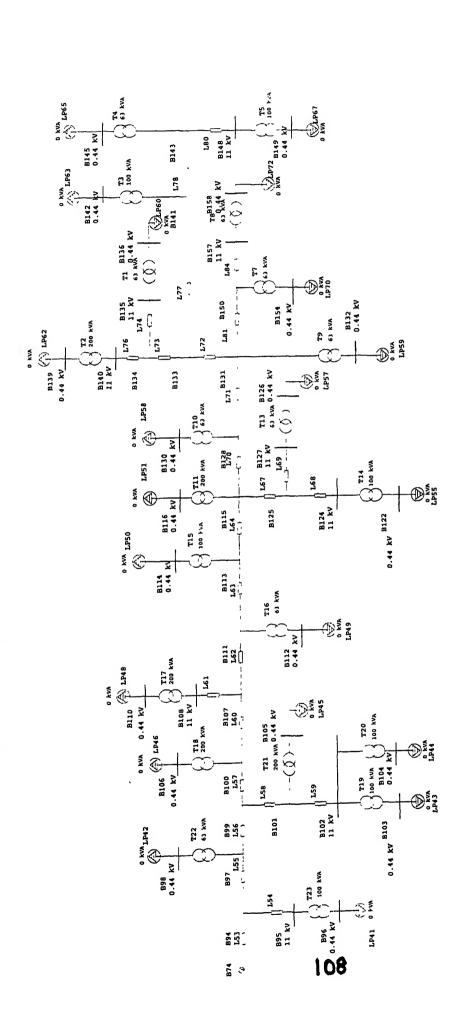
- \Rightarrow One Line Diagram of the 11 kV network
- ⇒ Load Flow Summary Report
- ⇒ Energy Losses and Agricultural Consumption
 Sample Case
- \Rightarrow Transformers and Agricultural Consumers
- \Rightarrow Sanctioned Demand Analysis
- \Rightarrow Summery for the Zone

page 1



106

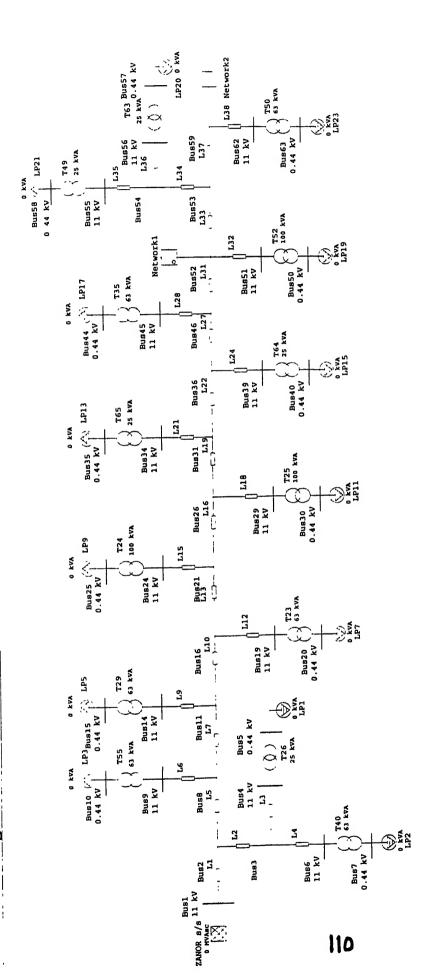




Project File: Nawyug Jul 03, 2002 14:58:21

page 1

One-Line Diagram - OLV1 109

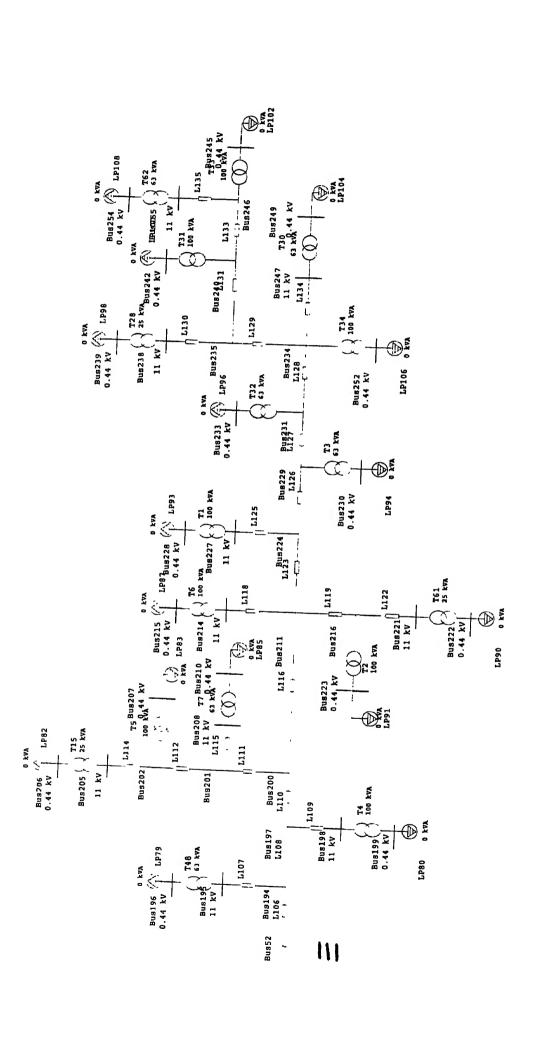


Jul 03, 2002

Project File: Pariej

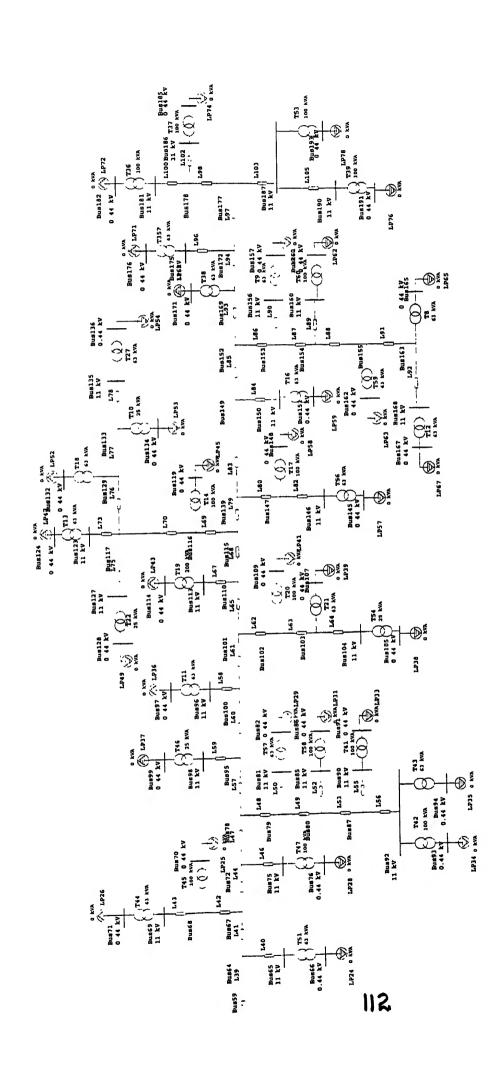
17:11:21

page 1

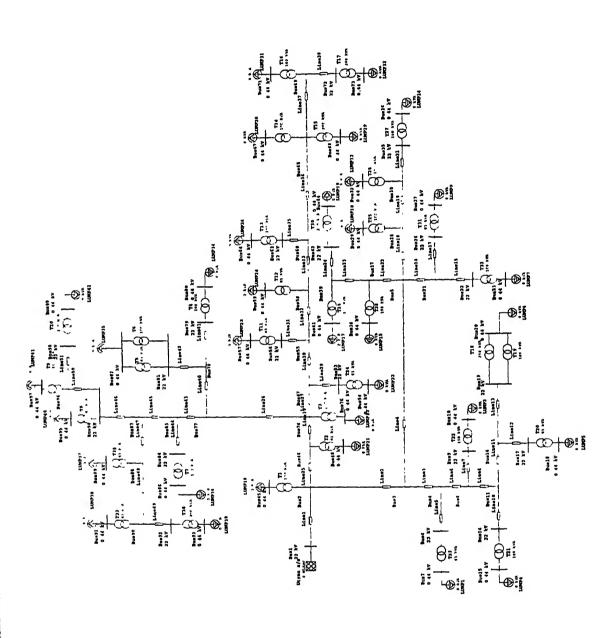


Project File: Pariej

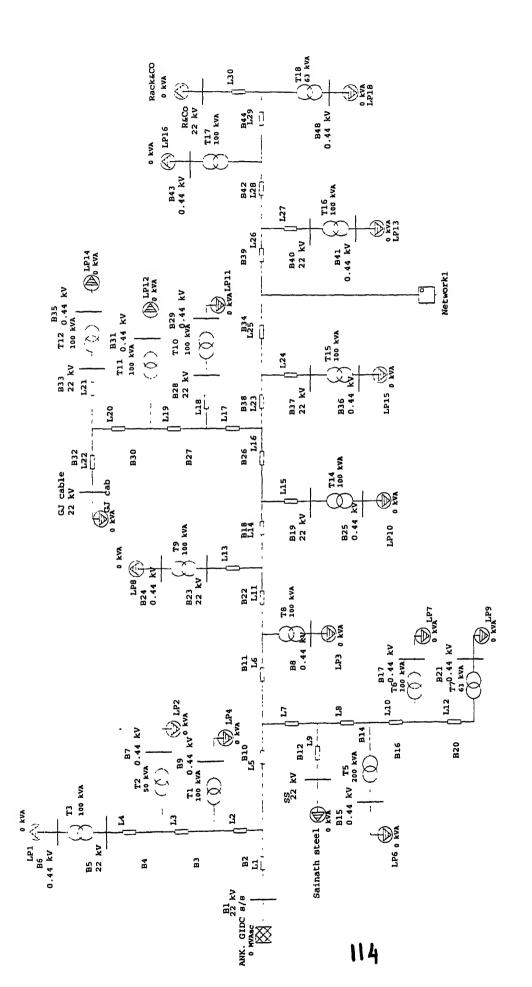
page 1 17:11:28 Jul 03, 2002



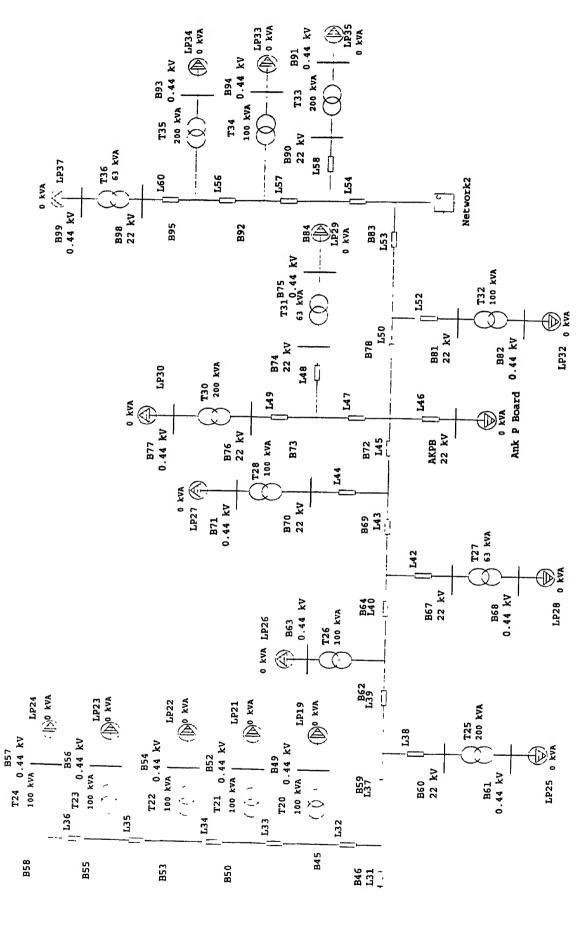
page 1 17:11:25 Jul 03, 2002 Project File: Pariej

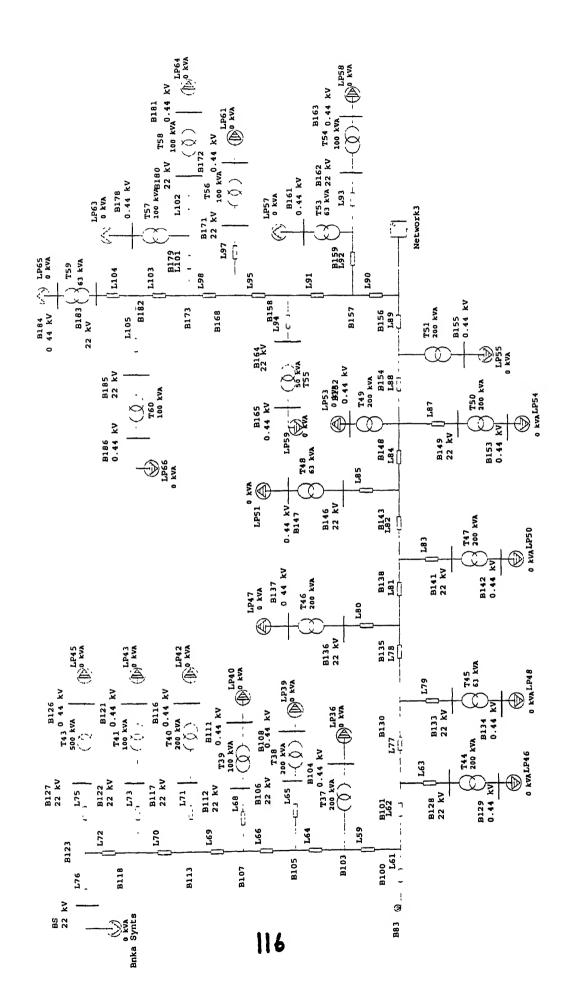


page 1 14:50:35 Jul 03, 2002 Project File: Amroli



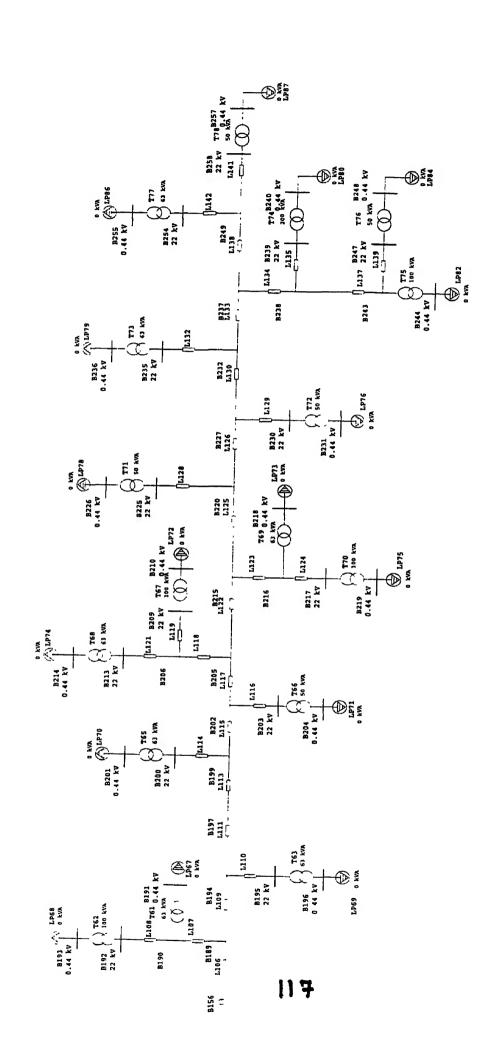
page 1 14:52:02 Jul 03, 2002 Project File: FeederNo11





14:52:11 Jul 03, 2002 Project File: FeederNo11

page 1



Project:□

Location: □

Contract: □ Engineer: 🗆 3.0.2C

Page:□1

Date: 01-05-2002

SN: CTATAENE

Revision: □Base

Study Case: LF

Filename:

Navyug

Config.: □Normal

Electrical Transient Analyzer Program

ETAP PowerStation Load Flow Analysis Loading Category: Design Normal Loading

Swing Generator Load Total 122 123 Number of Buses: 0 1 XFMR2 XFMR3

Number of Branches:

52

0

Reactor 0

Line/Cable 70

Impedance 0

Tie PD 0

Total 122

Method of Solution: Fast-Decoupled Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: Navyug

Output Filename: D:\GEBT&D\T&D\LTstudy\SouthZone\Surat\Navyug\Untitled.lf1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF
Swing Bus(es):	2.48	1.34	2.82	87.93 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	2.48	1.37	2.82	87.93 Lagging
Total Motor Load:	2.31	1.12	2.56	89.95 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.18	0.25		
System Mismatch:	0.00	0.00		

Number of Iterations: 3

Project:

Location

4.0.0C

Page: 1 Date: 05-01-2002

Contract.

Engineer:

Filename Rabda

SN. TATAENERGY

Study Case: LF

Revision: Base

Config.: Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category: Design

Swing

XFMR2

30

Generator 0

XFMR3

0

Load 78

Reactor

0

Total

Line/Cable

48

Impedance

0

Tie PD

Ŀ

Number of Branches

Number of Buses

Method of Solution Newton-Raphson Method

Maximum No of Iteration 5

Precision of Solution 0 001000

System Frequency 50.00

Unit System Metric

Project Filename Rabda

_	MW	Mvar	MVA	% PF	-
iwing Bus(es)	0 750	0.382	0.842	89.10	Lagging
ienerators.	0 000	0.000	0.000	100 00	Lagging
tal Demand	0 750	0.382	0.842	89 10	Lagging
tal Motor Load	0.723	0.350	0.803	90 00	Lagging
tal Static Load:	0 000	0.000			
parent Losses	0 027	0 032			
item Mismatch	0.000	0.000			

Project.

Location

Contract Ingmeer

Filename Pariej

4 0 0C

Page: 1

Date: 01-05-2002

SN: TATAENERGY

Revision: Base

Config.: Normal

Tic PD

0

Total

170

Study Case: LF Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category: Design

Generator

Load

Reactor

0

Total

Number of Buses.

Swing 1

XFMR2

63

0

XFMR3

0

170

171

Line/Cable

107

Impedance

0

Number of Branches

Method of Solution: Newton-Raphson Method

Maximum No of Iteration 5

Precision of Solution: 0 001000

System Frequency 50 00

Unit System Metric

Project Filename: Pariej

-	MW	Mvar	MVA	% PF	
Swing Bus(es)	2.186	0.945	2.382	91.80	Lagging
Generators:	0.000	0.000	0.000	100 00	Lagging
Total Demand:	2.186	0.945	2.382	91.80	Lagging
Total Motor Load:	2.088	0.825	2.245	93.00	Lagging
Total Static Load:	0.000	0.000			
Apparent Losses:	0.098	0.120			
System Mismatch:	0.000	0.000			

Project: Location:

Contract:□ Engineer: 3.0.2C

Page:□1 Date: 001-05-2002

SN: TATAENERGY Revision:□Base

Study Case: LF

Filename: Amroli

Config.: Normal

Electrical Transient Analyzer Program ETAP PowerStation Load Flow Analysis

Total

110

40

Loading Category: Design Normal Loading

Number of Buses:

Swing 1 XFMR2 35

Load 109 Reactor 0

Line/Cable

Impedance 0

Tie PD 0

Total 122

Number of Branches: Method of Solution: Fast-Decoupled Method

Maximum Number of Iteration: 5

Precision of Solution: 0.001000 MW and Mvar

System Frequency: 50.00 Unit System: Metric Project Filename: Amroli

Output Filename: D:\GEBT&D\T&D\LTstudy\SouthZone\Surat\Amroli\Untitled.lf1

Generator

0

XFMR3

0

	MW	Mvar	MVA	% PF
Swing Bus(es):	2.08	1.13	2.37	87.93 Lagging
Generators:	0.00	0.00	0.00	100.00 Lagging
Total Demand:	2.08	1.16	2.37	87.93 Lagging
Total Motor Load:	2.06	1.00	2.29	89.95 Lagging
Total Static Load:	0.00	0.00		
Apparent Losses:	0.03	0.02		
System Mismatch:	0.00	0.00		

Project

Location

4 0.0C

Page: 1 Date: 01-05-2002

Contract

i ngmeer

SN: TATAENERGY

Revision: Base

Filename FeederNo11

Study Case LF

Config.: Normal

Tic PD

0

Total

197

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category Design

Number of Buses

Swing 1

XFMR2

70

Generator 0

XFMR3

0

Load 197

Reactor

Total 198

Line/Cable

127

Impedance

0

Number of Branches.

Method of Solution. Newton-Raphson Method

Maximum No of Iteration 5

Precision of Solution. 0 001000

System I-requency: 50 00

Unit System: Metric

Project Filename: FeederNo11

Output Filename: C ETAP 400\PowerStation\GEB\FeederNo11\Feeder11.lf1

_	MW	Mvar	MVA	% PF	
Swing Bus(es)	2.636	1.473	3.020	87 30	Lagging
Generators:	0.000	0.000	0 000	100 00	Lagging
Total Demand.	2.636	1.473	3.020	87.30	Lagging
Total Motor Load:	2.603	1.411	2.961	87.92	Lagging
Total Static Load:	0.000	0.000			
Apparent Losses:	0.033	0.062			
System Mismatch	0.000	0 000			



Distribution System West Zone 1

- \Rightarrow One Line Diagram of the 11 kV network
- ⇒ Load Flow Summary Report
- ⇒ Energy Losses and Agricultural Consumption
 Sample Case
- ⇒ Transformers and Agricultural Consumers
- ⇒ Sanctioned Demand Analysis
- ⇒ Summery for the Zone

Energy sent and consumption for the Identified feeders during the study period (sample case)

ž	Sr. No Feeder	Circle	Energy Sent	Transformer	Billed Energy kWh Agricultural	Agricultural	Total Consumption
			OUL KANII	Consumption KWn		Consumption kWh	кWh
				Urban			
	Navyug	Surat	5494400	5172372	3310540	0	3310540
				Rural			
7	Rabda	Valsad	1940400	1782741	398465	1131962	1530427
9	Palej	Baruch	5026427	4466019	561783	3240275	3802058
				Industria	-		
4	Amroli	Surat	10127553	9941146	5485685	322864	5808540
2	Feeder No. II	Surat	8256600	6770599	4165433	0	4165433
				HT Express	55		
9	ParasPetro	Surat	4244570	4140876	4140876	0	4140876
7	GJ Apar	Baruch	4760502	4559698	4559698	0	4559698

Feeder wise losses (Total, HT and LT) during the Study period (Sample case)

Sr. No	Feeder	Circle	F	HT Losses kWh	ιWh	ITI	LT Losses kWh	Wh	Total Er	Total Energy Losses kWh	s kWh
			Total	Tech. Loss	Comm. loss	Total	Tech. Loss	Comm. loss	Total	Tech. Loss	Comm.
					Urban	U					
-	Navyug	Surat	322028	322028 312739	9288	1861832	411029	1450803	1861832 411029 1450803 2183860	723768	1460091
					Rural	-					
2	Rabda	Valsad	157659	26808	76762	252314 42167 210147	42167	210147	409973	123064	286909
3	Palej	Baruch	560408	255561	304847	663962 263085	263085	400877	1224370	518645	705725
					Industrial	rial					
4	Amroli	Surat	186407	186407 161248		4132596	323873	3808724	25159 4132596 323873 3808724 4319003	485119	3833884
သ	Feeder No.	Surat	1486001	182594		1303407 2605166 153201 2451965	153201	2451965	4091167	335800	3755368
9	ParasPetro	Surat	103694	93206	10488	0	0	0	103694	93206	10488
7	GJ Apar	Baruch	200804 195336	195336	5468	0	0	0	200804	195336	5468

Number of Agricultural consumers connected on selected feeders DTs and LT-HT ratio

	~	ı I						
Amroli	Feeder No. 11		Rabda	Palej		Navyug		Feeder Name
2	•		1	19		•		Number of Transformer with one Ag consumer
0		Indu	3	9	æ	•	Ur.	Number of Transformer with two Ag consumers
-	4	Industrial	23	28	Rural		<u>Urban</u>	Number of Transformer with more than two Ag consumers
7	22		24	34		10		Total HT Length
3	38		74	62		24.6		Total LT length
0.5	1.7		3.1	1.8		2.5		LT/HT ratio

Capacity wise number of transformers on selected feeders

Total	500	400	300	250	200	100	75	63	50	25	Capacity/Feeders kVA
33	2		•		•	13	•	16	0	2	Navyug
35	•	-	•	•	5	19	-	11	1	•	Amroli
8.2	2	2	1	1	17	32	•	16	7	•	Feeder No. II Rabda
31	•	•	•	-	ı	4	-	18	1	8	Rabda
45	-	-	1	•	-	4	•	28	0	12	Palej

	lguicultural GMnoitgmusnos (IsutoA)		3993	3808
During 2000-0	Assessed agricultural noitqmusnoo		2691954	7061626
	KWh Energy sent out ,		4614526	10954239
poi	Agnicultural AMnoiiymuznoo (Astual)		1679	1747
During study period	Assessed agricultural consumption	Rural	1131962	3240275
During	KWh Energy sent out ,	¥	1940400	5026427
	Actual Agricultural Load, 19 (MRI)		674	1855
	elතiට		Valsad	Baruch
	19 p99-J		Rabda	Palej
	Sr. No		-	2

List of meters on various feeders where operating load was found more than the sanctioned load

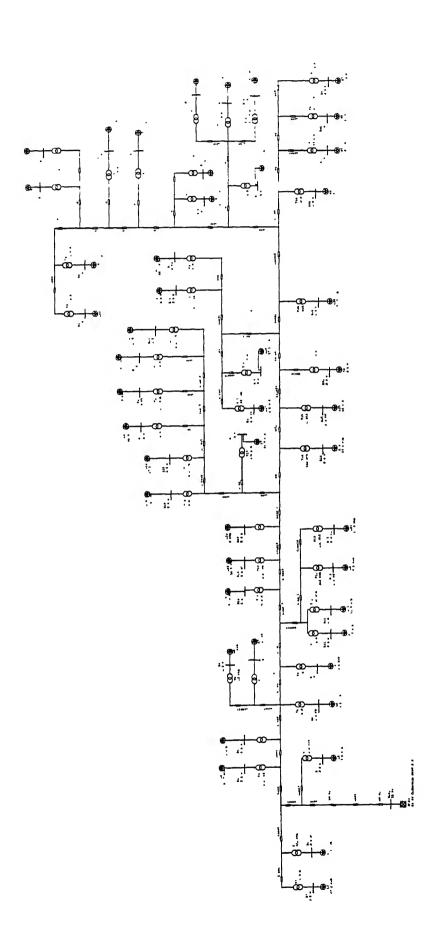
Feeder	Meter No	Connected load	Operating Load	Difference	% Difference
		S	South Zone		
Rabda					
	1960525	74	82	7	10%
2	1960527	35	37	2	5%
ယ	21138	25	43	18	72%
4	1960620	18	80	62	345%
Palej					
_	1960494	13	15	2	12%
2	1960599	7	1	4	47%
ယ	1960475	13	28	15	113%
4	1960471	11	12	-1	7%
51	1960457	8	14	6	81%
6	1960601	8	9		13%
7	1960459	65	89	24	36%
8	1960574	52	57	Ст	9%
9	1960455	22	30	8	35%
10	1960580	15	16	1	7%
11	1960460	79	87	8	10%
12	1959664	11	13	2	14%
13	1960668	15	23	8	55%
14	1960577	72	104	32	44%
15	1960474	11	12		7%
16	1960646	35	73	38	107%
17	1959659	22	30	7	32%
18	1959687	19	33	14	75%
19	1960354	11	28	17	153%

Summary of Transformers operating on high load

Secontaria de la	Number of Transformer With Higher Fercentage Load		4 13%	19 31%	
	Total number of Transformer	South Zone		30	62
Summer y	Feeder			Rabda	Palej

Category wise consumption for the South Zone during year 2000-01

			The state of the state of	-				
ategory	Category Total Total Sent out billed energy		Agricultural Total assessment Consi	Consumption	assessment Consumption Consumption/ technical energy energy	technical energy	commercial energy loss	energy loss
						MIL	2	Œ
	3	J.	Z.	MU		DE .		
							ļ.	170
			0.50	991	2409	131	347	0/4
Rural	1469	7.7	8 8	200				
	-					50,	630	772
		100		205		133	000	-
Jrban	977	CUZ						
	_					171	2272	2413
	$\frac{1}{1}$	568	L	268		-		
Industrial	7.381	2000						
						-	322	323
1	700	167		167				
HIT	430	2						
				4004	2409	406	3580	3986
Total	5917	1012	919	1821				



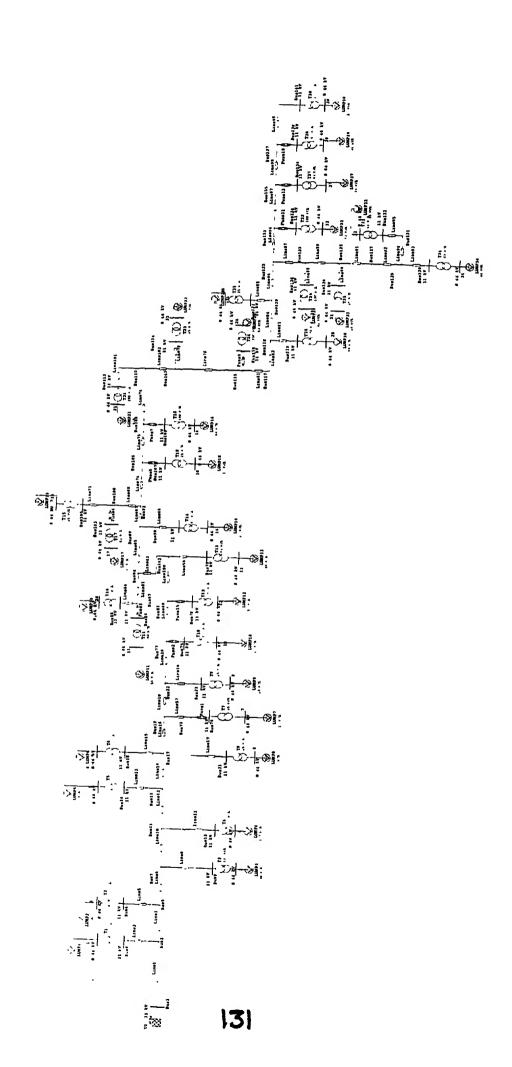
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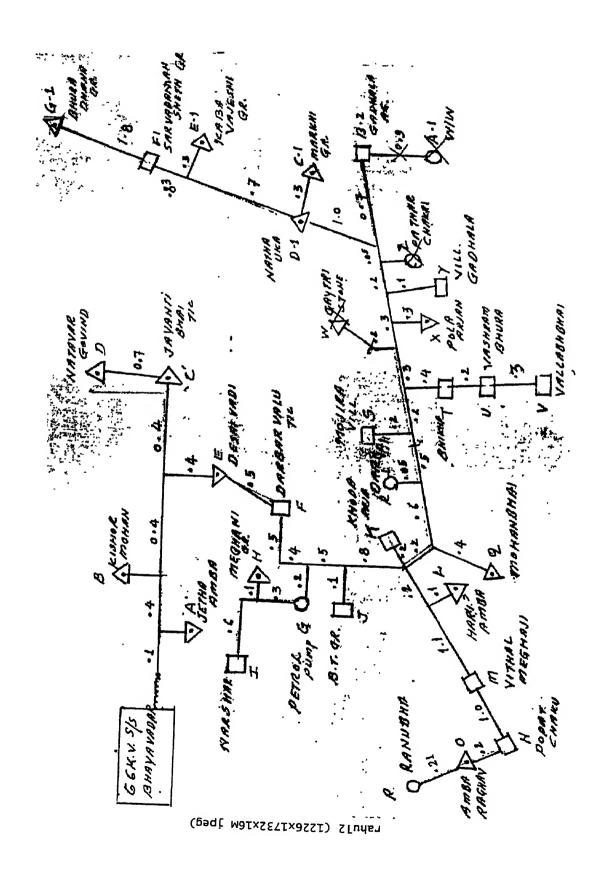
Jul 03, 2002

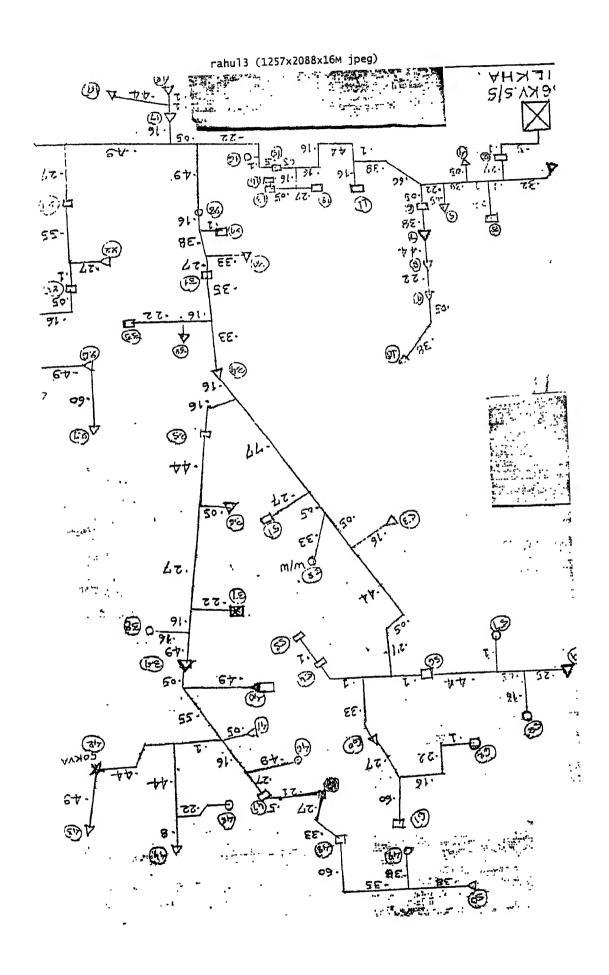
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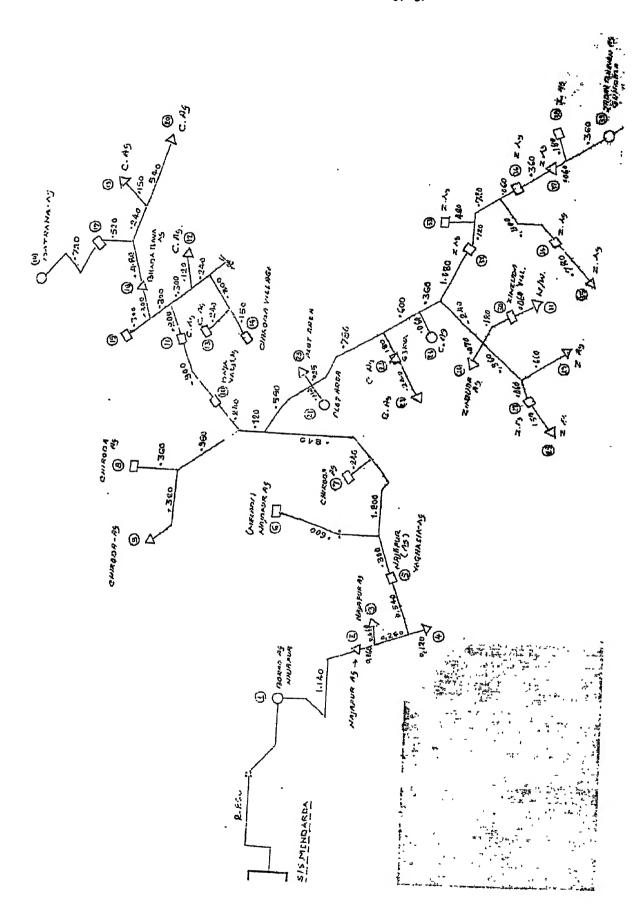
page 1

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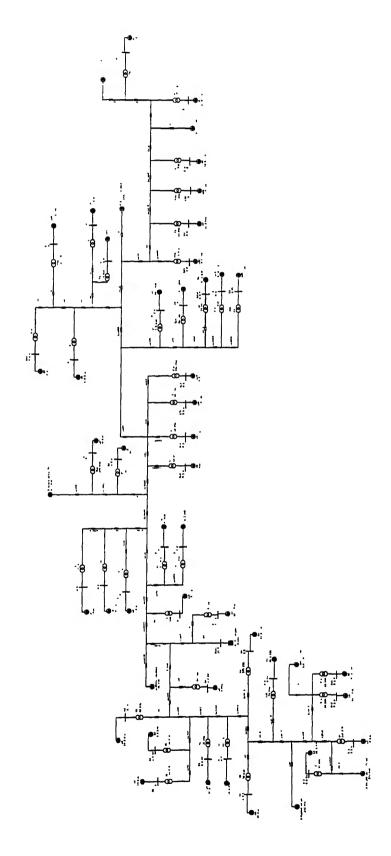






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page 1



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4 0 OC

Study Case. LF

Page: 1 Date 07-02-2002

SN TATAENERGY Revision, Base

Config Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Londing Category Design

Load Diversity Factor Nose

Number of Buses	S yras t	Generator O	<u>Lord</u> 113	<u>Total</u> 114			
Number of Branches	XPMR2 45	XPMR3	Reactor	Liag/Cable	impedance	Tie PD	Total

Method of Solution Newton-Raphson Method Maximum No of Iteration 99

Precusos of Solution 0 000100

System Frequency 50 00 Unit System Metrac

Project Filename Bhakunagar

Ontput Filename C VGEB_temporary/New Fulder (14)/Bhakunagan/Jatutled IQ

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

-	MW	Mvar	MVA	% PF
Swing Bes(es)		3 317	1 802	3 775
Generators		0 000	0 000	0 000
Total Demand		3 317	1 802	3 775
Total Motor Load		3 145	1 523	3 495
Total State Load		0 000	0 000	
Appendix Lusses		0 172	0 279	
System Musmatch		0 000		
a vincin (-) comment		0 000	0 000	

Number of Restrons 1

ETAP PowerStation Project: Location:

Contract: Engineer:

Filename: Mahila College

Page: 1 Date: 02-07-2002 4.0.0C

SN: TATAENERGY Revision: Base

Config.: Normal

Electrical Transient Analyzer Program ETAP PowerStation

Study Case: LF

Load Flow Analysis

Loading Category: Design Load Diversity Factor: None

Total 121 Number of Buses:

XFMR2 45 XFMR3 0 Reactor 0 Line/Cable Impedance 64 0 Number of Branches:

Method of Solution: Newton-Raphson Method Maximum No. of Iteration: 99

Precision of Solution: 0.000100

System Frequency: 50.00 Unit System: Metric

Project Filename: Mahila College

Output Filename: C.\GEB_temporary\New Folder (14)\Mahila college\Untitled.lfl

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF	-
Swing Bus(es):	2.276	1.261	2.602	87.46	Lagging
Generators:	0.000	0.000	0.000	100.00	Lagging
Total Demand:	2.276	1.261	2.602	87.46	Lagging
Total Motor Load:	2.082	1.008	2.313	90.00	Lagging
Total Static Load:	0.000	0.000			
Apparent Losses:	0.194	0.253			
System Mismatch:	0.000	0.000			

Study Case: LF

Project: Location:

Contract: Engineer:

Filename: Motimarad

4.0.0C

Page: 1 Date: 02-07-2002

SN: TATAENERGY Revision: Base

Config.: Normal

Electrical Transient Analyzer Program ETAP PowerStation

Load Flow Analysis

Loading Category. Design Load Diversity Factor: None

Number of Buses:	Swing l	Generator 0	Load 168	Total 169			
Number of Branches:	XFMR2 62	XFMR3 0	Reactor 0	Line/Cable 88	Impedance 0	Tie PD	Totai 190

Method of Solution: Newton-Raphson Method Maximum No. of Iteration: 99

Precision of Solution: 0.000100

System Frequency: 50.00 Unit System: Metric Project Filename Motimarad

Output Friename: C.\GEB_temporary\New Folder (14)\Motimarad\Untitled.If1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF	
Swing Bus(es)	1.097	0.607	1.254	87.46	Lagging
Generators:	0.000	0.000	0.000	100.00	Lagging
Total Demand	1.097	0.607	1.254	87.46	Lagging
Total Motor Lo	0.982	0.475	1.091	90.00	Lagging
Total Static Lo	0.000	0.000			
Apparent Loss	0.115	0.153			
System Misma	0.000	0.000			

Project: Location:

Contract: Engineer:

Filename: Gadhala

4.0.0C

Study Case: LF

Page: I Date: 02-07-2002

SN: TATAENERGY Revision: Base

Config.: Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category: Design Load Diversity Factor: None

Generator 0 Load 81 Total 82 Swing 1 Number of Buses:

Line/Cable Impedance XFMR2 30 XFMR3 Reactor 0 Total 190 Number of Branches:

Method of Solution: Newton-Raphson Method Maximum No. of Iteration: 99

Precision of Solution: 0.000100

System Frequency: 50.00 Unit System: Metric Project Filename: Gadhala

Output Filename: C.\GEB_temporary\New Folder (14)\Gadhala\Untitled.If1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

MW	Myar	MVA	% PF	•
0.794	0.440	0.908	87.46	Lagging
0.000	0.000	0.000	100.00	Lagging
0.794	0.440	0.908	87.46	Lagging
0.734	0.354	0.815	90.00	Lagging
0.000	0.000			
0.060	0.086			
0.000	0.000			
	0.794 0.000 0.794 0.734 0.000 0.060	0.794 0.440 0.000 0.000 0.794 0.440 0.734 0.354 0.000 0.000 0.060 0.086	0.794 0.440 0.908 0.000 0.000 0.000 0.794 0.440 0.908 0.734 0.354 0.815 0.000 0.000 0.060 0.086	0.794 0.440 0.908 87.46 0.000 0.000 0.000 100.00 0.794 0.440 0.908 87.46 0.734 0.354 0.815 90.00 0.000 0.000 0.060 0.086

Study Case: LF

Project: Location:

Contract: Engineer:

Filename: Bagdu

4.0.0C

Page: 1 Date: 03-07-2002

SN: TATAENERGY Revision: Base

Config.: Normal

Electrical Transient Analyzer Program ETAP PowerStation

Load Flow Analysis

Loading Category: Design Load Diversity Factor: None

Number of Buses:	Swing 1	Generator 0	Load 164	Total 165			
Number of Branches:	XFMR2	XFMR3	Reactor	Line/Cable	Impedance	Tie PD	Total
	62	0	0	90	0	0	109

Method of Solution: Newton-Raphson Method Maximum No. of Iteration: 99

Precision of Solution. 0.000100

System Frequency. 50.00 Unit System: Metric Project Filename: Bagdu

Output Filename: C.\Bagdu\Untitled.lf1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mvar	MVA	% PF	
Swing Bus(e	3.063	2.095	3.711	82.53	Lagging
Generators:	0.000	0.000	0.000	100.00	Lagging
Total Deman	3.063	2.095	3.711	82.53	Lagging
Total Motor	2.852	1.766	3.355	85.00	Lagging
Total Static L	0.000	0.000			
Apparent Los	0.211	0.329			
System Mism	0.000	0.000			

Study Case: LF

Contract: Engineer:

Project: Location:

Filename: Chiroda

4.0.0C

Page: 1 Date: 02-07-2002

SN: TATAENERGY Revision: Base

Config.: Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category: Design Load Diversity Factor: None

Total 135 Generator 0 Number of Buses:

XFMR2 44 XFMR3 0 Reactor Line/Cable Impedance 0 92 0 Number of Branches:

Method of Solution: Newton-Raphson Method Maximum No. of Iteration: 99

Precision of Solution: 0.000100

System Frequency: 50.00 Unit System: Metric Project Filename: Chiroda

Output Filename: C:\GEB_temporary\New Folder (14)\Chiroda\Untitled.lf1

SUMMARY OF TOTAL GENERATION. LOADING & DEMAND

-	MW	Муаг	MVA	% PF	
Swing Bus(es)	2.984	1.654	3.412	87.46 La	gging
Generators:	0.000	0.000	0.000	100.00 La	gging
Total Demand	2.984	1.654	3.412	87.46 La	gging
Total Motor Lo	2.726	1.318	3.028	ها 90.00	gging
Total Static Lo	0.000	0.000			
Apparent Loss	0.258	0.336			
System Misma	0.000	0.000			

Study Case: LF

Project:
Location: 4.0.0C

Contract: Engineer:

Filename: Vijarkhi

Page: 1 Date: 02-07-2002

SN: TATAENERGY Revision: Base

Config.: Normal

Electrical Transient Analyzer Program ETAP PowerStation

Load Flow Analysis

Loading Category: Design

Load Diversity Factor: None

Swing Generator Load Total
Number of Buses: 1 0 128 129

Number of Branches: XFMR2 XFMR3 Reactor Line/Cable Impedance Tie PD Total 190

Method of Solution: Newton-Raphson Method Maximum No. of Iteration: 99

Precision of Solution 0.000100

System Frequency: 50.00 Unit System: Metric Project Filename: Vijarkhi

Output Filename: C.\GEB_temporary\New Folder (14)\Vijarkhi\Untitled.lfl

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Myar	MVA	% PF	
Swmg Bus(es)	2.048	1.136	2.342	87.46	Lagging
Generators:	0.000	0.000	0.000	100.00	Lagging
Total Demand	2.048	1.136	2.342	87.46	Lagging
Total Motor L	1 833	0.887	2.036	90.00	Lagging
Total Static Lo	0.000	0.000			
Apparent Loss	0.215	0.249			
System Misma	0 000	0.000			

Project.
Location 400

Contract.

Study Case: LF

Filename, Jambudiya

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Calegory Design

Load Diversity Pactor None

Method of Solstice Newton-Raphson Method

Maximum No of Iteration 99

Precision of Substion 0 000100

System Prequency 50 00

Unit System. Metric

Project Filestame Jamhediya

Output Filename. C VGEB_temporary(New Polder (14)\Jambudiye\Untilled IfI.

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Mver	MVA	% PF	
Swing Busies:	3 149	2 024	3 744	84,13	Lagging
Constalors:	0 000	0.000	0.000	100 00	Lagging
Total Demand	3.149	2 024	3 744	\$4,13	Legging
Total Motor Load	3 070	1.902	3.611	85 00	Laggag
Total States Load	0 000	0 000			
Apparent Louise	0.000	0 121			
System Minmatch.		0.000	0.000		

Number of Resuscess. 3

Energy sent and consumption for the identified feeders during the <u>study period</u> (sample case)

out Consumption (kWh) (kWh) (kWh) (kWh)	Sr. No	Sr. No Feeder	Circle	Energy Sent		Billed Energy	Agricultural	Total
Urban Urban Urban Bhaktinagar Rajkot 9272673 8762460 6337138 0 Mahila College Rajkot 957256 7855511 5560895 0 Zikiyari Rajkot 3372673 17579 176882 176882 Motimarad Rajkot 4394526 1907081 776882 176882 Gadhala Rajkot 882800 652071 47124 177682 Bagdu Junagarh 6588534 5527714 526037 167003 Chiroda Jampagarh 6719417 5452816 296391 17612 Vijarkhi Jambudiya Rajkot 7944800 7805003 6370535				out (kWh)	Consumption (kWh)	(kWh)	Consumption (kWh)	Consumption (kWh)
Bhaktinagar Rajkot 9272673 8762460 6337138 0 Mahila College Rajkot 9572556 7855511 5560895 0 Zikiyari Rajkot 3678310 3372673 17579 17579 Motimarad Rajkot 4394526 1907081 776882 176882 Gadhala Rajkot 882800 652071 47124 176882 Chiroda Junagarh 6588534 5527714 526037 160037 Chiroda Jamnagarh 6719417 5452816 296391 17612 Vijarkhi Jambudiya Rajkot 7944800 7805003 6370535								
Bhaktinagar Rajkot 9272673 8762460 6337138 0 Mahila College Rajkot 957256 7855511 5560895 0 Zikiyari Rajkot 3678310 3372673 17579 176882 Motimarad Rajkot 4394526 1907081 776882 17124 Gadhala Rajkot 882800 652071 47124 1724 Bagdu Junagarh 6598534 5527714 526037 296391 Chliroda Junagarh 6719417 5452816 296391 Vijarkhi Jamnagar 3704000 2925446 377612 Jambudiya Rajkot 7944800 7805003 6370535					Urban			
Briakunagar Rajkot 9572556 7855511 5560895 1 1 1 1 1 1 1 1 1				0272673	8762460	6337138	0	6337138
Mahila College Rajkot 9572556 (R85511) 3300537 Zikiyari Rajkot 3678310 3372673 17579 17579 Motimarad Rajkot 4394526 1907081 776882 1774 Gadhala Rajkot 882800 652071 47124 1724 Bagdu Junagarh 6598534 5527714 526037 176003 Chiroda Junagarh 6719417 5452816 296391 17612 Vijarkhi Jamnagar 3704000 2925446 377612 Industrial Industrial 6370535	-	Bhaktinagar		3212013	2000	FEEDOOF	c	5560895
Rural Rural Rural 17579 17579 17579 17579 17582 17682 177682 18282 18280 <t< td=""><td>2</td><td>Mahila College</td><td>Rajkot</td><td>9572556</td><td>110008/</td><td>2200022</td><td></td><td></td></t<>	2	Mahila College	Rajkot	9572556	110008/	2200022		
Zikiyari Rajkot 3678310 3372673 17579 2 Motimarad Rajkot 4394526 1907081 776882 776882 Gadhala Rajkot 882800 652071 47124 177124 Bagdu Junagarh 6588534 5527714 526037 296391 Chiroda Junagarh 6719417 5452816 296391 177612 Vijarkhi Jamnagar 3704000 2925446 377612 1764strial Jambudiya Rajkot 7944800 7805003 6370535					Rural			
Zikiyari Rajkot 36/8310 35/2013 11373 Motimarad Rajkot 4394526 1907081 776882 Gadhala Rajkot 882800 652071 47124 Bagdu Junagarh 6598534 5527714 526037 Chiroda Junagarh 6719417 5452816 296391 Vijarkhi Jamnagar 3704000 2925446 377612 Jambudiya Rajkot 7944800 7805003 6370535				0,0000	0200200	17570	2659864	12677442
Motimarad Rajkot 4394526 1907081 776882 Gadhala Rajkot 882800 652071 47124 Bagdu Junagarh 6598534 5527714 526037 Chiroda Junagarh 6719417 5452816 296391 Vijarkhi Jamnagar 3704000 2925446 377612 Jambudiya Rajkot 7944800 7805003 6370535	3	Zikivari	Rajkot	36/8310	33/20/3	11313	00000	4004004
Mountilian Mountilian A 7124 Gadhala Rajkot 652871 47124 Bagdu Junagarh 6598534 5527714 526037 Chiroda Junagarh 6719417 5452816 296391 Vijarkhi Jamnagar 3704000 292546 377612 Jambudiya Rajkot 7944800 7805003 6370535		Matimomod	Raikot	4394526	1907081	776882	102/323	1004504
Gadhala Rajkot 882800 6520714 47124 Bagdu Junagarh 6598534 5527714 526037 Chiroda Junagarh 6719417 5452816 296391 Vijarkhi Jamnagar 3704000 2925446 377612 Industrial Industrial 6370535	4	Mountaiau	1 valvor	20000	770074	A749A	58695	634119
Bagdu Junagarh 6598534 5527714 526037 Chiroda Junagarh 6719417 5452816 296391 Vijarkhi Jamnagar 3704000 2925446 377612 Industrial Industrial 6370535 Jambudiya Rajkot 7944800 7805003 6370535	5	Gadhala	Rajkot	882800	170769	47 124	20000	E0440E0
Chiroda Junagarh 6719417 5452816 296391 Chiroda Junagarh 6719400 292546 377612 Vijarkhi Jamnagar 3704000 292546 377612 Industrial 6370535	0	Donder	hososth	6598534	5527714	526037	4488032	2014003
Chiroda	ا	Dayuu	Jungain.	6710417	5452816	296391	5022350	5318741
Vijarkhi Jamnagar 3704000 2925446 37.012	_	Chiroda	Junagain	1112110	0102010	01000	1005000	2202025
Jambudiya Rajkot 7944800 7805003	8	Vijarkhi	Jamnagar	3704000	2925446	3//612	11023323	2505333
Jambudiya Rajkot 7944800 7805003					Industrial			
Jampudiya	١		Doileat	7044800	7805003	6370535	0	6370535
	ת	Jampudiya	Majnut	2001				

Fooder wise Fnergy to	Franco losses	sses (Total, HT and LT) during the Study period (Sample case)	and LT) du	ring the S	study peric	od (Sample	t case)				
Sr. No	Feeder	Circle	H	HT Losses kWh	£	17	T Losses kWh	۔	Total E	Total Energy Losses kWh	is kwh
			Total	Tech.	Comm.	Total	Tech.	Comm. loss	Total	Tech. Loss loss	Comm. loss
					Urban						
	Oboldingson	Doilent	510213	281480	1	228733 2425322	40836	2384486	40836 2384486 2935535	322316	2613219
	TI I	Majnut	2010	l		2201616		177130 2117485 4011661	4011661	789246.8	3222415
2	Mahila	Rajkot	1717045	612110		1104822 8284011		201			
	College										
					Rura	<i>)</i>					
١	1711	Daikat	205637	l	190332 115306	695231	35160		660071 1000868	225491	775376
9	ZIKIYarı	L'alkot	20000	L	107746 2250608	1	102877 16028 69		86848 2590321	143774.6	2446547
4	Motimarad	Kajkot	2481444	1	200000		900		248681	32471	216210
ıç.	Gadhala	Raikot	230729	24406	200323		Cono	- [100017	7 600070	4955444
	Doceit	timagarh	1070820	170853	899967		513645 47470.08	4	1584465	1	1300141
٥	Daylor	Transfer I	4266602	372R36	893766		134075 99456.97		34618 1400676	472292.8	928383
,	Chiroda	Juliagaill	1200002		1		56248	L	REB263 1501065	279993	1221073
8	Vijarkhi	Jamnagar	//8554	77/44		١.		1			
					Industrial	rial				1	000111
		1 1 2	420708	C 10504 2	}	50274 1434467 9741,396 1424726 1574265	9741,396	1424726	1574265	99265.62	1475000
6	Jampudiya	Kajkot	138/80	- 1							

Number of Agricultural consumers connected on selected feeders DTs and LT-HT ratio

	l ml		
Zikiyari Motimarad Gadhala Bagdu Chiroda Vijarkhi Jambudiya	Bhaktinagar	Name	Feeder
2 4 6 5 6		with one Ag consumer	Number of
7 Rural 7 2 1 1 1 Industrial	St.	Transformer with two Ag	Number of
13 45 29 47 36	Consumers	Transformer with more than two Ac	Number of
9.0 16.32 22.29 23.13 20.7 28.4 49.4	KM	Total HT Length	ber of
8.9 23.2 7.5 59.7 53.0 78.2 67.5	KM	Total	HT ratio
1.0 1.4 0.3 2.6 2.8 2.8 1.4	ratio	THIT	

Capacity wise number of transformers on selected feeders

Vijarkhi		5 6	-	21 22		18 27						44 56
Bagdu Ghiroda		10	1	28		23				-		62
Gadhala		က	-	13		13						30
Motimarad		6		28		25						62
Zikiyari		œ		=		13						32
sylbudmst		2	1	12		23	-					42
Mahila College		1		2		24	15					45
Вһакџиадаг		3		4		15	25		-		-	49
Capacity/Feeders kVA		25	50	63	75	100	200	250	300	400	200	Total

			_			_	 Sr. No	
							GI. NO	
6 Vijarkhi	5 Chiroda	4 Bagdu	3 Gadhala	2 Motimarad	1 Zikiyari		Feeder	
Jamnagar	Junagarh	Junagarh	Rajkot	Rajkot	Rajkot		Circle	
1511	3424	3326	920	905	1417		Actual Agricultural Load, HP(MRI)	
3704000	6719417	1	882800		3678310		Energy sent out , kWh	During
3704000 1825323	6719417 5022350	6598534 4488032	882800 586995	4394526 1027323	3678310 2659864	Rural	Assessed agricultural consumption	During study period
1208	1467	1349	638	1135	1877		Agricultural consumption/HP (Actual)	riod
8133600	7244960	7987490	3315000	4911188	4661656		Energy sent out , kWh	
4008219	5415161	5432739	2204224	1148105	3370942		Assessed agricultural consumption	During 2000-0
2652	1582	1633	2397	1269	2379		Agricultural consumption/HP (Actual)	4

1960982 53.712 1960987 66.394 1960981 41.776 1960779 66.021 1960775 58.934 1960776 29.467 1960777 29.467 1960786 60.799 1960787 35.435 196088 58.188 1960986 26.11 1960986 26.11 1960987 42.895 1960789 54.831 1960781 19.396 1959840 64.902 1959840 64.902 1960769 41.776 1960964 22.38 1960958 48.117 1950877 14.036	Feeder	Meter No	Meter No Connected Load	Operating Load Difference	Difference	% Difference
1960982 53.712 1960957 66.394 1960981 41.776 1960759 66.021 1960756 58.934 1960756 58.934 1960757 29.467 1960757 29.467 1960757 29.467 1960756 60.799 1960767 35.435 1960788 58.188 1960986 26.11 1960987 11.936 1960789 54.831 1960789 54.831 1960781 19.396 1959840 64.902 1960749 19.396 1960760 41.776 1960964 22.38 1960968 48.117 1960968 48.117						
1960982 1960981 1960779 1960775 1960775 1960775 1960785 1960784 1960986 1960789 1960986 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960964			8	Rural		
1960982 1960981 1960779 1960775 1960775 1960751 1960986 1960986 1960986 1960986 1960789 1960986 1960789 1960986 1960789 1960987 1960987 1960987	sagdu					
1960957 1960779 1960775 1960775 1960775 1960786 1960984 1960986 1960986 1960986 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960789	-	1960982	53.712	133	79.288	148%
1960981 1960779 1960775 1960756 1960751 1960984 1960985 1960985 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960985 1960789 1960985	2	1960957	66.394	129	62.606	94%
1960779 1960756 1960775 1960761 1960868 1960984 1960985 1960985 1960789 1960789 1960789 1960789 1960789 1960789 1960789 1960789	3	1960981	41.776	93.78	52.004	124%
1960756 1960775 1960796 1960751 1960868 1960986 1960985 1960985 1960791 1959846 1959840 1959840 1960962 1960964 1960964	4	1960779	66.021	116	49.979	%92
1960755 1960756 1960751 1960868 1960986 1960986 1960985 1960789 1960789 1960789 1960789 1960789 1960789 1960964 1960964	5	1960756	58.934	105.2	46.266	%62
1960796 1960868 1960785 1960984 1960985 1960789 1960789 1960789 1959840 1959840 1960962 1960964 1960964	9	1960775	29.467	70	40.533	138%
1960751 1960868 1960785 1960984 1960985 1960789 1960789 1959846 1959840 1959840 1960964 1960964 1960964	7	1960796	60.799	98.78	37.981	62%
1960868 1960785 1960984 1960985 1960789 1960789 1959846 1959840 1959840 1959840 1960964 1960964 1960958	8	1960751	35.435	69.5	34.065	%96
1960785 1960984 1960986 1960788 1960789 1960791 1959846 1959840 1960964 1960964 1960964	6	1960868	58.188	91.3	33.112	57%
1960984 1960986 1960788 1960789 1960791 1959846 1959840 1960962 1960964 1960964	10	1960785	60.053	87	26.947	45%
1960986 1960788 1960789 1960789 1960791 1959846 1959840 1960962 1960964 1960964	11	1960984	11.936	37.83	25.894	217%
1960963 1960788 1960789 1960789 1959846 1959840 1959840 1960962 1960964 1960958	12	1960986	26.11	51.2	25.09	%96
1960788 1960985 1960789 1960789 1959846 1959840 1960749 1960964 1960964 1960958	13	1960963	95.488	120.4	24.912	26%
1960985 1960789 1950791 1959846 1959840 1959840 1960962 1960964 1960958	14	1960788	81.314	104	22.686	28%
1960789 1960791 1959846 1959840 1960749 1960964 1960964 1960958	15	1960985	42.895	64.47	21.575	50%
1960791 1959846 1959811 1960749 1960962 1960964 1960958	16	1960789	54.831	75.86	21.029	38%
1959846 1959811 1960749 1960962 1960964 1960958	17	1960791	19.396	40.41	21.014	108%
1959811 1959840 1960749 1960962 1960964 1960958	18	1959846	31.705	51.83	20.125	63%
1959840 1960749 1960962 1960964 1960958	19	1959811	11.19	27	15.81	141%
1960749 1960962 1960964 1960958	20	1959840	64.902	79.4	14.498	22%
1960964 1960958 1959837	21	1960749	19.396	31.66	12.264	63%
1960964 1960958 1959837	22	1960962	41.776	53.83	12.054	29%
1960958	23	1960964	22.38	32.22	9.84	44%
1959837	24	1960958	48.117	55.75	7.633	16%
Jonana:	25	1959837	11.936	19.09	7.154	%09

3E 1050813	24 1961006	23 1961005	22 1959810	21 1960713	20 1960996	19 1960678	18 1960862	17 1960711	16 1960954	15 1959843	14 1960689	13 1959834	12 1960865	11 1961007	10 1960867	9 1960992	8 1960864	7 1960781	6 1960778	5 1960782	4 1960690	3 1960906	2 1960959	1 1961011	Chiroda	29 1960877	28 1960773	27 1960754	26 1960787	
37.30 44.9	39.54 53	60.80 75.6	11.19 31.2	38.79 60.3	55.95 77.6	52.22 76.3	74.60 100	52.22 85.6	86.54 120	31.33 68	51.85 91.96	26.11 70.23	31.33 78.82	39.91 88.2	11.19 60	29.84 84.35	55.95 111.23	22.38 85.8	17.90 86.76	31.71 102.2	52.97 125.37	38.05 119.2	54.83 143.5	26.11 145.3		45.133 50.6	47.371 52.89	24.245 29.93	50.355 56.29	-
7.60	13.46	14.80	20.01	21.51	21.65	24.08	25.40	33.38	33.46	36.67	40.11	44.12	47.49	48.29	48.81	54.51	55.28	63.42	68.86	70.50	72.40	81.15	88.67	119.19		5.467	5.519	5.685	5.935	
20%	34%	24%	179%	55%	39%	46%	34%	64%	39%	117%	77%	169%	152%	121%	436%	183%	99%	283%	385%	222%	137%	213%	162%	456%		12%	12%	23%	12%	

_			,			ı	,	ı		ı	,	ı	ì	ı	1	1	1	ì	ì	i	,	1	ì	1	ŀ	ł	1	ı	1	٦
% Difference	14%	22%	12%	21%	27%		309%	%89	53%	132%	52%	102%	%95	28%	54%	15%	16%	10%		1.5%	46%	4000/	100%	136%	28%	16%	%89	2%	/600	97.79
Difference	99.9	6.15	4.07	3.77	2.77		76.98	38.28	35.36	29.62	26.38	23.57	18.93	16.19	15.21	6.85	5.96	1.09		30.99	23.11	05.40	52.79	15.19	12.39	8.79	7.58	0.87		47.77
Operating Load	55.9	34.5	37.64	21.3	12.84		101.87	94.23	102.5	52	77.48	46.7	52.5	74.38	43.56	51.24	43.26	12.28		73.88	73.46		49.66	26.38	56.4	62.5	18.77	19.15		106.31
Connected Load	49.24	28.35	33.57	17.53	10.07		24.89	55.95	67.14	22.38	51.10	23.13	33.57	58.19	28.35	44.39	37.30	11.19		42.90	50.36		23.87	11.19	44.01	53.71	11.19	18.28		58.54
Meter No	1961010	1960685	1959833	1961008	1959842		1960842	1959794	1961031	1961014	1960693	1960965	1960972	1961015	1960745	1960695	1960838	195827		1960885	1959817		1960940	1959798	1960832	1960830	1959806	23091		23502
Feeder	26	22	286	000	3 08	Vijarkhi	-	2	1 6	4	. 2	9	7	. 0	5 0	10	11	12	Gadhala	1	2	Motimarad	-	2	8	4		် မ	Zikivari	-

Feeder	Meter No	Meter No Connected Load	Operating Load	Difference	% Difference
2	1960173	29.74	74.60	44.86	151%
ယ	1960175	18.14	44.76	26.62	147%
4	23505	26.83	48.49	21.66	81%
5	1959700	17	37.30	20.30	119%
6	1961051	38.87	50.36	11.49	30%
7	1961052	50	55.95	5.95	12%
8	1959704	59.6	64.16	4.56	8%
9	1960046	10.5	14.92	4.42	42%
10	1959686	10.96	14.92	3.96	36%
1	1960172	41.85	44.76	2.91	7%
12	1960027	36.38	37.30	0.92	3%
13	1959524	15.71	16.41	0.70	4%
14	1960030	14.7	14.92	0.22	%1

Summary of Transformers operating on high load

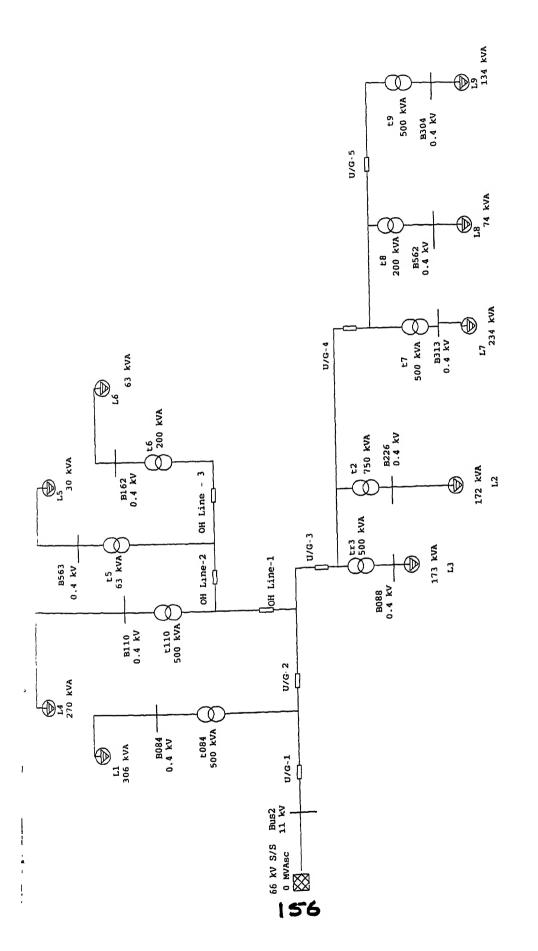
Feeder	Total number of Transformer	Number of Transfor Load	Number of Transformer with Higher Percentage Load
		Rural	
Bagdu	62	38	61%
Chiroda	44	33	75%
Motimarad	62	6	10%
Gadhala	30	2	7%
Vijarkhi	56	15	27%
Zikiyari	32	14	44%

Category wise consumption for the West Zone 1 during year 2000-01

Category	Total	Total	Aoricultural Total		Agricultural Total		Total	Total
f offered	Sent out	billed	assessment	umption	Consumption/		commercial energy	energy
		energy		•	£	energy loss	loss	loss
	M	IM	ME	D\$4		DW.	DW.	NM
Direct	3686	116	2465	2675	1662	218	887	1105
5000	2000							
lirhan	1001	1013		1250		108	780	888
200								
Industrial	645	431		532		8	206	214
HTEX	136	112		138		1	23	24
Total	6368	1672	2465	4137	1662	335	1896	2231

Distribution System West Zone 2

- ⇒ One Line Diagram of the 11 kV network
- ⇒ Load Flow Summary Report
- ⇒ Energy Losses and Agricultural Consumption
 Sample Case
- \Rightarrow Transformers and Agricultural Consumers
- ⇒ Sanctioned Demand Analysis
- ⇒ Summery for the Zone

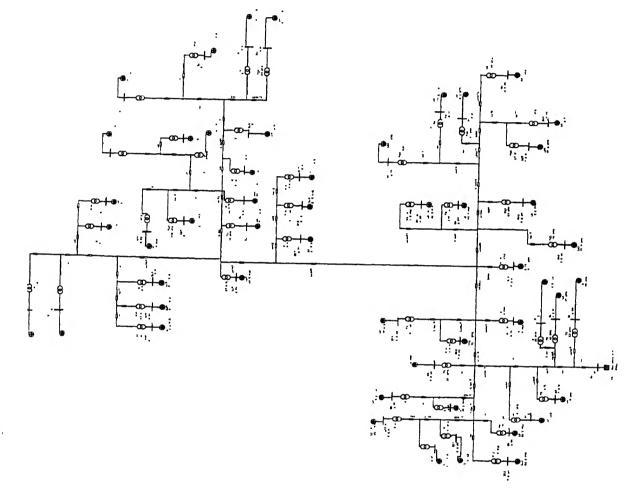


Project File: Khargate

Jul 03, 2002

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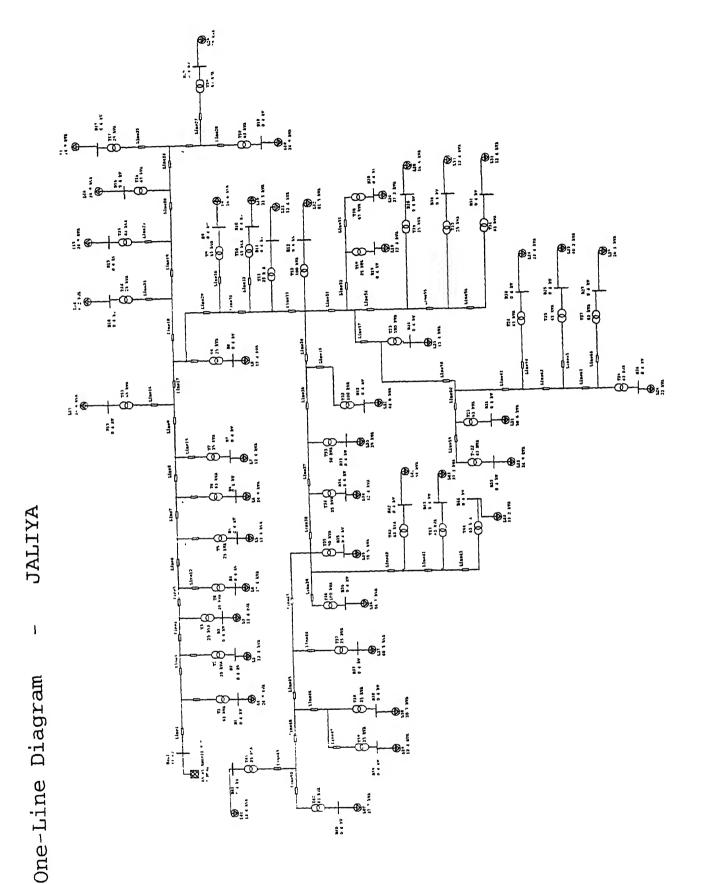
page 1



Project File: Bhandar

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Project Location

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Page: I Date: 07-02-2002

SN TATAENERGY REVISION BASE

Stedy Case. LF

Coafig Normal

Electrical Transient Analyzer Program

ETAP Powerstation

Load Flow Analysis

Loading Category Design

Load Diversity Factor Nose

Number of Buses	<u>\$-ише</u> 1	Generality 0	<u>i,oad</u> 17	<u>Total</u> 18			
Number of Brunches	XFMR2	<u>XPMR3</u> 0	Reactor Q	Line/Cable	impedance O	Tis PD 0	Total

Method of Solution Newton-Raphson Method Maximum No of Regulation 99

Precision of Solution 0 000100

System Prequency 50 00

Unit System. Metric

Output Pilename C VGEB_temporary/New Policer (14/\Khargate1\Khargate1\Khargate1)

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	мw	Mvar	WVA	5 PF	-
Swing Bus(cs)	1 322	0 671	1 482	89 16	Lagging
Generators.	0 000	0 000	0 000	100 00	retire
Total Demand	1 322	0671	1 482	29 16	Lagging
Total Motor Load	1 310	0 635	l 45 6	90 00	Laggag
Total States Load	0 000	0 000			
Apparent Louis	0.011	0 037			
System Marmatch	0 000	0.000			

Number of Iterations. 2

400C

Stelly Case. LF

SN TATAENERGY Revision. Base

Page 1 Date 07-02-2002

Config Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category Design

Load Diversity Factor None

Number of Buses XFMR3 XFMR2 50 Luac/Cable 74 Number of Branches

Method of Solition Newton-Raphson Method Maximum No of Iteration 99

Precision of Salution 0 000100

System Frequency 50 00

Unit System. Metine

Project Filename Palasan

Output Filename C VGEB_temporary/New Folder (14)/Paissannew/Untitled iff

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

-	ww	Mver	MVA	% PF	
Swing Bus(es)	1 722	0 885	1 936	88 94	Lagging
Generators	0 000	0 000	0 000	00 001	Lagging
Total Demand	1 722	0 885	1 936	88 94	Lagging
Total Motor Load	1 680	0 814	1 867	90 00	Lagging
Total Static Load	0 000	0 000			
Apparent Louis	0.041	0 07;			
System Marmatch		0 000	0 000		

Number of Iterations 2

4 0 0C

Contract.

Engineer

Pager 1 4 0 0C Date: 02-07-2002

> SN TATAENERGY Revision, Base

Study Cene: LF

Config Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category Design

Load Diversity Factor None

Serial Generation Lond Total
Number of Busco 1 0 190 191

 XFMR2
 XFMR3
 Reactor
 LuncKlable
 Immediator
 Tis PD
 Total

 Number of Branches
 78
 0
 0
 112
 0
 0
 190

Method of Solistion Newton-Raphson Method Managemen No of Iteration 99

Precursos of Solution 0 000100

System Frequency: 50 00

Unit System. Metric

Project Friename Bhandar

Output Frienams C VGEB_temporary/New Folder (14)/Bhandar/Untitled If1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

_	MW	Myar	MVA	4 PF	
Swing Buston;	3 428	l 901	3 920	87 46	Laggery
Generators	0 000	0 000	0 000	100 00	Lagging
Total Demand	3 428	1 901	3 920	87 46	Lagging
Total Motor Load	3 194	1 547	3 548	90 00	Legges
Total State Lond.	0 000	- 0 000			
Apparett Louis.	0.235	0 354			
System Musmatch.	0 000	0 000			

Number of Serutions. 3

Project Location

4 0 0C

Page: 1 Date: 03-07-2002

Study Case. L.F

SN TATAENERGY Revision Base

Config. Normal

Electrical Transient Analyzer Program

ETAP PowerStation

Load Flow Analysis

Loading Category Design

Load Diversity Factor None

Number of Buses

Line/Cable impedance Tie PD 65 0 0 <u>Total.</u> 109 XFMR3. XFMR2 Reactor Number of Branches

Method of Solution Newton-Raphson Method Maximum No of Iteration 99

Precision of Solution 0 000100

System Frequency 50 00

Unit System Metric

Project Filename Jaliya

Output Filename C Valrya\Untitled If1

SUMMARY OF TOTAL GENERATION, LOADING & DEMAND

	MW	Yvar	MVA	% PF	-
Swing Buil(es)	1.104	0.755	1 337	82.53	Lagging
Concretors	0 000	0,000	0 000	1 00.00	Lagging
Total Demand.	1.104	0.755	1.337	82.53	Lagging
Total Motor Load	1.012	0.627	1.191	85 00	LAKEINE
Total Status Load	0,000	0,000			
Apparent Louise	0.092	0.128			
System Musmalch.	0 000	0.000			

Number of Iterations: 3

Energy sent and consumption for the Identified feeders during the study period (sample case)

5732788 3246144 0	1 1 1 1	out kWh	C @		KWh	(Wh
	Bhavnagar	5806532	5732788	3246144	0	3246144
	Sure'nagar	5423246	4147365	7259	3812563	3819822
4147365 7259 3812563	Bhavnagar	9139322	6229786	367128	5116353	5483480
4147365 7259 6229786 367128	Amreli	2277609	1829409	300249	1484622	1784871

Feeder wise losses (Total, HT and LT) during the Study period (Sample case)

Sr. No	Feeder	Circle	토	HT Losses kWh	№	E	LT Losses kWh	Wh	Total En	Total Energy Losses kWh	s kWh
			Total	Tech. Loss	Comm. loss	Total	Tech. Loss	Comm. loss	Total	Tech. Loss	Comm. loss
					Urban	-					
1	Karget	Bhavnagar 73744	73744	31240		2486644	200297	2286347	42504 2486644 200297 2286347 2317268		231537 2085731
					Rura	Ī					
2	Palasan	lasan Sure'nagar 1275881	1275881		59694 1216187 327543 24039	327543	24039	303504	1610683		83733 1526950
3	Bhandar	Bhavnagar 2909536	2909536	``	398886 2510650	746305	746305 384178	362127	3655842		783064 2872778
4	Jaliya	Amreli	448200	94495	353705		44538 36637	7901	492738	131132	361606

Number of Agricultural consumers connected on selected feeders DTs and LT-HT ratio

Jaliya	Bhandar	Palasan		Karget		Feeder Name
11	3	21		•		Number of Transformer with one Ag consumer
6	4	19	R		ū	Number of Transformer with two Ag consumers
17	63	10	Rural	•	Urban	Number of Transformer with more than two Ag consumers
46.13	34.12	14.13		3.6		Total HT Length
32	89.4	7.6		12.72		Total LT length
0.7	2.6	0.5		3.5		LT/HT ratio

Capacity wise number of transformers on selected feeders

_	_	2 1	5 2 -	5 2 4
	63	63 00	63 100 200 500	00 00 00 00
	_	2 1	6 2 1	6 0 -
	24	24 25	24 25	24
3 -	26	26	26 44	26
	18 7	18 7	18 7	18 7

_	·	_	·	_	_	_	
-	Agricultural Athnoitamusnoo (Actual)			1813	2407	1256	
During 2000-01	Assessed agricultural consumption			4314616	9110051	1373707	
	KWh Energy sent out ,			6137400	16273250	2107450	
poi	lsrutlusingA Affinoitqmusnos (IsutsA)			1602	1352	1357	
During study period	Assessed agricultural noliqmuenoo		Rural	3812563	5116353	1484622	
During	Energy sent out , kWh		R	5423246	9139322	2277609	
	Actual Agricultural Load, HP(MRI)			2380	3785.5	1094	
	elani Ə			Sure'nagar	Bhavnagar	Amreli	
	19p9 -]			Palasan	Bhandar	Jaliya	
	on 's			-	2	က	

Category wise consumption for the West Zone2 during year 2000-01

Category Total Sent o	5	Total billed energy	Agricultural Total assessment Cons	Total Consumption	Agricultural Total Agricultural Total assessment Consumption Consumption/ technical HP energy	į.	Total Total commercial energy loss	Total energy loss
	M	M	DW(DW.		DW.	WC	MU
Rural	3128	333	1881	2214	1859	06	824	914
Urban	1003	879		879		32	92	124
Industrial	194	144		144		2	48	20
нтех	59	52		52		0.1	6.9	7
Total	4384	1408	1881	3289	1859	124	971	1095

Summary for the State

- ⇒ Energy Sent, Consumed and Agricultural Consumption
- ⇒ Energy Losses in the State
- ⇒ Sanctioned Demand Analysis
- ⇒ Comparison of 11 kV losses (Total, Technical and Commercial) of Zones
- ⇒ Comparison of losses (Total) in Rural Category
- ⇒ Comparison of losses (Total) in Urban Category
- ⇒ Comparison of losses (Total) in Industrial Category
- ⇒ Comparison of losses (Commercial) in Rural Category
- ⇒ Comparison of losses (Commercial) in Urban Category
- ⇒ Comparison of losses (Commercial) in Industrial Category
- ⇒ Comparison of Agricultural Consumption in Zones
- ⇒ Energy Sent out in Various Zones

Summary of Transformers operating on high load

Feeder	Total number of Transformer	Transformer where loads are higher than sanctioned	Percentage
North			
Piludara	65	8	12%
Laxmipura	52	8	15%
Madhi	21	10	48%
B'Pura	22	10	45%
Katpur	46	24	52%
Mahepura	57	7	12%
Pali	27	11	41%
Matu	46	5	11%
Majadar	36	1	3%
Lukhasan	34	13	38%
Rohika	58	23	40%
Central			
Nadisar	68	10	15%
Gothaj	50	19	38%
Bhoj	64	23	36%
South			
Rabda	30	4	13%
Palej	62	19	31%
West			
Bagdu	62	38	61%
Chiroda	44	33	75%
Motimarad	62	6	10%
Gadhala	30	2	7%
Vijarkhi	56	15	27%
Zikiyarı	32	14	44%
Total	1024	303	30%

Zone Wise Energy Sent and Consumed (11 kV and below) in the State for the Year 2000-01

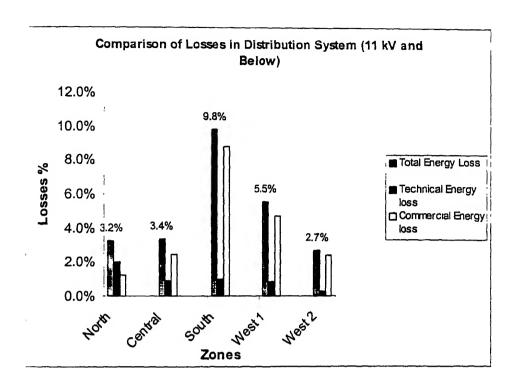
Zones	Energy Sent	Energy Billed	Agricultural Consumption	Total Consumption	
North	10121	2163	6647	8810	
Central	4026	1733	925	2658	
South	5917	1011	919	1930	
West 1	6386	1672	2465	4137	
West 2	4384	1408	1881	3289	
Total	30834	7987	12837	20824	

Zone Wise Distribution (11 kV and below) Energy losses in the State for the Year 2000-01

Zones	Total Energy Loss	Technical Energy loss	Commercial Energy loss
North	1311	812	499
Central	1368	358	1010
South	3987	406	3581
West 1	2249	335	1914
West 2	1095	124	971
Total	10010	2035	7975

Zone Wise Energy Sent and Consumed (including the EHT) in the State for the Year 2000-01

Zones	Energy Sent			Total Sent	Energy Billed		Total Billed	Agricultural Consumption	Total Consumption
	11 kV and Below	EHT Feeders	Losses in 400, 220 kV			EHT Feeders			
North	10121	853	560	11534	2163	853	3016	6647	9663
Central	4026	1204	223	5453	1733	1204	2937	925	3862
South	5917	5654	327	11898	1011	5654	6665	919	7584
West 1	6368	211	352	6931	1672	211	1883	2465	4348
West 2	4384	135	241	4760	1408	135	1543	1881	3424
Total	30817	8057	1704	40576	7987	8057	16077	12837	28881



Graph: Comparison of Losses in Distribution System (11 kV and Below)

